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An Evaluation of Group Therapy Using the 16 PF, MMPI, and TAT

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AN EVALUATION OF GROUP THERAPY USING THE 16 PF, MMPI, AND TAT

by

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ABSTRACT

The 16 PF, MMPI, and TAT were used to evaluate personality changes in 35 male college students as a result of participation in a disclosure-confrontation group session, using measures related to anxiety, ego strength, and level of motivation. The participants were tested before the session and one month following it. A control group of 35 male college students were tested before and after an equivalent interval.

Participants in a DC group session showed a decrease in anxiety and an increase in ego strength, as measured by 16 PF factors and MMPI clinical scales. The control group showed similar changes in anxiety and ego strength, although the changes on the MMPI scales were not at as high a level of significance as in the group of participants.

The Motivation Index from Story Sequence Analysis of the TAT increased significantly after participation in the DC group session but did not change in the control group.

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To Dr. Donald J. Tyrell, whose courage and commitment to people have led through risky areas of uncharted clinical practice and personal living, this study expresses hope that his explorations have been fruitful.

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LIFE

Bede Smith was born in Monroe City, Missouri, on September 16, 1942.

He entered Divine Word Seminary in Duxbury, Massachusetts in 1958, and received his B.A. in philosophy from Divine Word College, Conesus, New York. From De Paul University, Chicago, he received the Bachelor of Science degree in biology in 1966.

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CHAPTER I

INTRODUCTION

New approaches to psychotherapy generally arise in the clinic rather than in the laboratory. Unlike drugs, which are developed and tested before they are applied, new therapeutic techniques are typically "invented" and applied before they are researched. This fact, noted by Bergin and Strupp (1970) in their review of new directions in psychotherapy, leads to a gap between the practices of the clinician and the theories that loosely articulate his practices as well as the research that tests them. The innovative clinician is more in the forefront of new therapeutic approaches than the researcher. However, once a new therapeutic approach is found effective by the clinician in practice, it still needs to be analyzed. Its effectiveness needs to be more rigorously evaluated lest too much be made of startling but scattered successes. Mechanisms and variables need to be isolated, case experiments need to be planned, so that the method can be refined and tested.

The following study intends to investigate personality changes that occur following participation in a disclosure-confrontation group session. This form of group therapy has been developed and employed by Donald J. Tyrell in his clinical practice but has not yet been subjected to thorough research. This study aims to determine whether any changes occur in participants of such sessions, what these changes are, and whether they can be considered therapeutically beneficial. It is hypothesized that changes

which do occur will be reflected in the measures used. If these changes significantly differ from the records of a control group tested over an equivalent period of time, it is suggested that they are due to the intervention of the disclosure-confrontation session. Specifically, it is hypothesized that the level of anxiety will decrease, the level of ego strength will increase, and motivation will change in a positive direction.

CHAPTER II

REVIEW OF RELATED LITERATURE

Research in psychotherapy may be concerned either with the outcome or with the process of psychotherapy (Meltzoff and Kornreich, 1970). Research on the outcome of therapy concentrates on discovering whether a therapy is effective or not and determining what the effects are. Research on the process of therapy aims at isolating variables within the therapy itself that account for the changes observed. Examples of process research in psychotherapy include studies where different methods of therapy are compared to determine their relative merits, where a particular therapy is applied to different pathologies to determine its specific effectiveness in each case, where a particular type of therapy is employed by different therapists to determine whether its effectiveness is idiosyncratic to specific therapists. Process studies would ordinarily follow outcome studies since it is first necessary to know what the effects of therapy are and whether it does what the therapist claims for it (outcome) before proceeding to investigate how or why or under what circumstances it is effective (process). A new therapeutic approach is generally ushered on the scene with a wave of enthusiasm and carried along the crests marked by instances of success. But the surge of enthusiasm must meet the hard facts of controlled research to prevent the brightness of initial successes from blinding one to contrary instances. The optimism of an innovator should welcome critical assessment.

The following study is concerned with the outcome of disclosure-confrontation sessions, not with the process. It concerns the whether and what of the effects and not the how and why. By the design of the study, it cannot compare this form of therapy to other forms since there is no control for other forms of therapy. It aims only at finding the effects of the therapy in contrast to controls without therapy. However, to understand what the therapy consists in, the review of literature will include a description of disclosure-confrontation therapy as it compares to related therapies as well as an evaluation of the specific measures used in the study.

Disclosure-confrontation Therapy

An extensive description of disclosure-confrontation (DC) therapy is given by Donald J. Tyrell in When Love is Lost (Waco, Texas: Word Press, 1971, in press). It can be considered as individual therapy in a group setting, for in this open-ended session confrontation is focused on one individual at a time until he comes to some resolution of whatever conflict remains if possible. Each person in the group commits himself to stay until the group decides it has gone as far as it can to resolve the problems of each individual. He also commits himself to be as open and honest with the group about his past and present behavior and feelings as he can. The same commitment is made by the therapists. As dishonesties and hiding become known to the therapists in the session, the person is confronted with these at whatever level of personality it is relevant. Particular techniques are employed to bring about exposure when disclosure is not spontaneous or

complete. Such techniques aim at recreating as vividly as possible, either in reality or in imagination, the barriers to self-disclosure so that the person can face them and get beyond them. These barriers are emotional trauma and habits or value conflict. Verbal confrontation exposes inconsistencies and gaps in the person's self-disclosure or value system. Physical confrontation may be used to provide a corrective emotional experience. The corrective experience consists in allowing the person to express his fear, anger, or affection in a safe situation without punishment or ridicule. When the corrective experience cannot be re-enacted in reality, an attempt is made to do this through imagination. Techniques involving imagination include forced or implosive fantasy (Stampfl and Levis, 1967) and Jung's free fantasy technique. The essence of the therapy, however, does not consist in the particular technique employed on occasion, but in the honest disclosure of oneself to others. Only when this disclosure is not spontaneous are techniques employed.

More clarification of the nature of DC therapy can be had by comparing and contrasting it with similar group therapies. Various forms of group therapy have much in common and the differences are not always so apparent. When "ground rules" are clearly indicated, differences are quickly seen, but often differences are a matter of the emphasis of the group, its goal, the theoretical orientation (e.g. behavior therapy, psychoanalytic, sensitivity, transactional analysis), or the personal approach of the therapist and his involvement.

In terms of the goals of therapy, DC group sessions are similar to Mowrer's Integrity Groups (1969). The three cardinal principles behind

Integrity Groups are honesty, responsibility, and emotional involvement. Mowrer stresses all three of these elements as the tripod to uphold Integrity Groups. This triad he shares with Mainord (1968) whose contract states that (1) the patient must agree to be completely open with the group, (2) he must accept total responsibility for all his behavior (acting according to his own ethical code), and (3) each patient must accept responsibility for every other patient in the program. Mainord's tripod of openness, responsibility, and involvement becomes for Mowrer: honesty, responsibility, and emotional involvement. For Mowrer, a person's discomfort as a "neurotic" has developed primarily because of bad choices and habits, and "therapy" aims to help him become more honest, more responsible, and more involved. In contrast to the reality therapy of Glasser (1965) who stresses responsibility and involvement, but says little of honesty; and in contrast to Jourard (1964) who stresses honesty and involvement rather than responsibility; Mowrer insists on all three of these principles.

The tripod for DC therapy is similar to Mowrer's: it is truth, freedom, and care. The goals aimed for in the participant and his relation to others in the group, and afterwards to the significant persons in his life, are that he be truthful, free, and caring. Lest this seem only a semantic difference from Mowrer, clarification will be helpful. Although it is hoped that the participant reach a greater degree of these three qualities in his relationships, they are not the contract of the participant nor is there any promise that he will achieve them as a result of the session. His commitment is rather to be as open and honest (truthful) as he can be, and responsible enough to remain in the session until the group has decided that it has gone

as far as possible. He is committed to be truthful (both honest by not lying, and open by not hiding), but the only commitment he makes to the group beforehand is to remain with it. Like Mowrer, DC therapy recognizes the difference between honesty at various levels of personality, between the intellectual openness and honesty of giving an accurate account of overt actions and the emotional honesty that accompanies them. In fact, most of the dishonesty met on sessions is emotional, since usually participants are capable of and committed to intellectual honesty, but they may be quite unaware of their emotional dishonesty.

Corresponding to Mowrer's stress on responsibility, DC therapy aims to increase the range of freedom that a person is capable of. It assumes that responsibility is the consequence of freedom and that being free is a condition for real responsibility. This range of freedom is increased by facing the fears that keep a person from acting responsibly and by making him more aware of the consequences of his actions or inaction on others.

Rather than emotional involvement, DC therapy stresses care. But this is not a commitment demanded of the participant. Care usually implies an emotional involvement, but more fundamentally it requires a decision to act toward another person's benefit. The problem is often to distinguish between care and emotional involvement, how one's fear, anger, or affection toward another is to be appropriately expressed. Emotional involvement is not the goal of DC therapy, but caring for oneself and others is.

Like Integrity Groups, DC therapy does not consider people on a sick-healthy continuum, but on the line from immaturity to maturity. It holds that a person is immature (not "neurotic") primarily because of bad choices and habits. However, it recognizes the effects of emotional experiences in

a person's life and aims to supply corrective experiences for them. As faulty intellectual and moral habits must be corrected on an intellectual or moral level, so faulty emotional experiences must be dealt with on an emotional level. But DC therapy, like Mowrer's Integrity Groups, might be accused of being "moralistic" in insisting that a mature person sets goals and makes choices for which he is held responsible.

Mowrer (1969) sets down seven ground rules for Integrity Groups:

> (1) There is no physical violence or threat of physical violence. Violation of this rule may be just cause for summary expulsion of the offending individual from the group.
> (2) No one leaves a group session when he is under challenge or "upset." Persons freely come and go for any minor reason, but if a person is having a "run" and becomes "involved" with another individual or the group as a whole, he stays on and sees it through before leaving the room.
> (3) There is no Red-Crossing or rat-packing. When one individual is under challenge, another person does not go to his aid until the nature of the challenge has been made completely clear and the merits of the case reviewed. Also, if a person is spontaneously expressing emotional or moral pain, he is not to be given spurious assistance or reassurance. On the other hand, we are very concerned about justice and never want a group to "gang-up" on a given member.
> (4) There is no restriction as to what language may be used in a group.
> (5) There is no "sub-grouping," i.e. what is called "whispering" in grammar schools. If you have "something to say," then it is ordinarily said to the group as a whole.
> (6) All conversation and action that transpire in a group are strictly confidential.
> (7) Each newcomer is asked to commit himself to the three principles of Honesty, Responsibility, and Involvement--and to be open to challenge in regard to his nonpractice of any of these. He also commits himself to attend six consecutive meetings of the group, at which time he may leave if he chooses.

DC therapy differs particularly on two of these. Physical violence is dealt with. No one is "given permission" to act out his anger physically, but if this is necessary for him to face his feelings honestly, he is confronted on this level. It is a man's fear that in his anger he might hurt others or himself that prevents him often from facing his anger. It is

considered worth the physical danger to deal with this fear rather than to bring a person to the point of physical aggression and then back off or threaten expulsion from the group. He may not, however, attack anyone in the group except the therapists who are willing to face the possible danger.

The commitment asked in DC therapy is that the person be honest and open and stay until the group session is finished. He must also see some need for change in his life before he is admitted. To this extent it resembles the honesty, responsibility, and involvement commitment in Integrity Groups.

Mowrer is oriented toward behavior therapy and would lean toward standard behavior modification techniques such as desensitization (Wolpe, 1961) or implosive therapy (Stampfl and Levis, 1967), although he himself does not employ them. It is noted that implosive therapy is often used in the DC session. The group setting can add a further dimension to the implosive technique. After having faced an implosive procedure, acceptance by a group is a powerful reinforcement for having successfully dealt with an anxiety. In some instances, the group becomes a part of the implosive therapy itself. A person afraid of being left alone, may be in fact "left alone" by the group while he is being further subjected to an imaginative sequence of being alone and abandoned. His subsequent return to the group assures him that fearful possibilities he vividly imagined did not eventuate and the corrective experience with the group present again helps him deal with the fear in the future.

DC therapy and Integrity Groups differ also, of course, on the time arrangement. Integrity Groups meet periodically (weekly) for two or three

hours at a time; DC therapy is an open-ended single session. A person might attend another session later but that would be independently determined.

Being an open-ended session makes DC therapy like the marathon sessions of George Bach. Bach (1966, 1967) states that the purpose of the marathon group is to intensify transparency and genuine encounter by a deliberate instigation of group pressure focused on behavioral change. Bach and Mowrer, like DC therapy, stress behavioral change and leveling with one another, no sub-grouping, and confidentiality. Both Bach and DC therapy use a time-extended session, but the purpose of being open-ended in DC therapy is not to "pressure-cook" or induce fatigue. It is rather to allow time for defenses to drop and to insure that all problems can be adequately dealt with before leaving. Unfortunately, the word "marathon" applied to an open-ended group session often connotes the physical fatigue and endurance contests associated with gymnastic events or dance marathons. The session is open-ended not to wear down, but to insure that issues raised can be dealt with and to prevent people from leaving the session with unresolved problems simply because time is up. It also discourages a person from holding out, thereby hoping to escape dealing with himself and others in the group.

Bach, like Mowrer, also outlaws all forms of physical violence. But he does stress aggressive verbal confrontation as therapeutically helpful and presents data to support this (1967).

Bach and Mowrer use "techniques", but only under special circumstances. Both share with DC therapy hesitation in the use of techniques because they can distract from the main goal of the group--the honest self-disclosure of one person to another.

Bach stresses the here and now behavior in the group rather than the why and where from of behavior. DC therapy is concerned mainly about the here and now, but recognizes the effect of emotional habits and life styles built up over years of habit.

Both Bach and Mowrer employ a selection procedure for their groups, as does DC therapy. Mowrer uses an Intake Interview that resembles subsequent Integrity Group sessions. Bach selects persons according to their attitudes toward self-change and group constellations. Like DC therapy, the participants must convince the co-therapists that they are anxious to make significant changes. DC therapy selects participants on the basis of at least one clinical interview and a test battery including the 16 Personality Factor Questionnaire, the Minnesota Multiphasic Personality Inventory, the Thematic Apperception Test, and a Sentency Completion Form.

Bach stresses the therapy role of every member in the group. This is true also of DC groups, although the therapists play a large role and are not "facilitators" in the background. In DC therapy sessions, there are at least two co-therapists and usually more than two. The therapists are participants like others, particularly in self-disclosure. The importance of self-disclosure on the part of the therapist is emphasized by Jourard (1964); in DC therapy, the commitment to honest self-disclosure is made by the therapists as well as the other participants.

This similarity to the approaches of Mowrer, Bach, and Jourard will distinguish DC groups from most forms of group work including "sensitivity groups," T-groups, and nude marathons such as Bindrim's (1968). Although denuding is employed in DC therapy when intellectual and emotional exposure cannot be attained, it is by no means essential to the approach

and is not the aim of the session nor is it used to explore feelings arbitrarily.

The Evaluation of Therapy

The difficulties of psychotherapy research elaborated by Meltzoff and Kornreich (1970) provide some criteria by which to evaluate further studies. Particularly the debate between Eysenck (1952, 1954, 1955, 1960, 1964) and others (Rosenszweig, 1954; DeCharms, Levy, and Wertheimer, 1954; Luborsky, 1954; Cartwright, 1955; and Strupp, 1963) has put the burden of proof on those who are trying to establish that therapy is more effective than non-therapy. Eysenck's earlier statements were based on selected studies, but most of those responding to his critique missed the point of his argument: the possibility has not been disproved that the differences between therapy and non-therapy might be chance variations. Meltzoff and Kornreich (1970) give a review of the debate and point out that Eysenck had missed many studies of therapy. They point out that the myth that controlled evaluative studies on psychotherapy have not been done has been passed on by those who "relied upon Eysenck's review but did not (themselves) review the literature in depth" (p. 74). Meltzoff and Kornreich's own review of the literature on psychotherapy outcome distinguishes between adequate and questionable studies. And among each of these divisions they consider studies that show positive results and those that show no or negative results. Among the studies with positive results they distinguish between positive results that are major and positive results that are minor. The major positive result would be a study where the treated group, when compared to the control

group, showed significant reduction of symptoms without substitution, or improvement in general adjustment in several important areas. A minor positive result would show improvement in a restricted or limited area that does not bear on a central condition. This classification is summarized:

A. Adequate	B. Questionable
A1 Positive (major)	B1 Positive (major)
A2 Positive (minor)	B2 Positive (minor)
A3 Null or negative	B3 Null or negative

Ideally for therapy evaluation, one would hope for an adequate study with major positive results. But more important would be to determine what type of research results one has actually obtained and accept it within that context. Questionable research may still have supportive if not demonstrative value. Questionable research is just that--questionable; but in many cases it may be better than nothing. Unfortunately, since much of psychotherapy research is done within a clinical setting, one has to be satisfied with less than adequate research design if he is to do research at all.

Adequate studies, according to Meltzoff and Kornreich (1970) fulfill the following criteria: (1) freedom from major flaws that might invalidate the conclusions; (2) use of an appropriate control group and adequate sampling; (3) relative freedom from bias; (4) employment of reasonably objective, reliable, and valid criteria measures; and (5) presentation of suitably analyzed and interpreted data. When the results and discussion of this study are presented, they will be subjected to each of these criteria to determine its adequacy and limitations. First, the measures used in the

study will be investigated to determine their objectivity, reliability, and validity as measurements of therapeutic change.

The MMPI in the Evaluation of Therapy

Among the controlled outcome studies of good quality reviewed by Meltzoff and Kornreich (1970), the criterion measure most often used was observed behavior (53%) followed by objective personality tests or inventories (34%). The same ranking is present when all studies are included, with observed behavior used in 39% of the studies and objective personality tests or inventories used 27% of the time. Projective techniques were used 18% of the time in good quality studies and 19% of the time in all studies. The most common objective personality test or inventory used has been the MMPI.

Inventories lead to problems because most were designed for other purposes than the evaluation of therapeutic change, e.g. for diagnosis, as is the MMPI. Responses to many items refer to past history that are revealing for diagnostic purposes but would not be expected to change with therapy. In so far as these items load the scale, it becomes less sensitive as a scale measuring change. It increases the probability of a high correlation between initial and final scores. Some items on the inventory may be worded so they do not pick up the nuances that reflect actual change.

Despite these difficulties, however, studies have shown that the MMPI is useful in evaluating therapy, although many of the studies need critical evaluation. One of the earliest studies, by Rashkis and Shaskin

(1946), examined the protocols of twenty-two psychiatric patients and fifteen anxiety patients following group therapy. They found the greatest changes on the D (Depression), Hy (Hysteria), Hs (Hypochondriasis), and Pt (Psychasthenia) scales. These are the scales associated with later measures of anxiety constructed from the combination of MMPI scales (cf. Modlin, 1947; Purcell, 1952; Welsh, 1952). They found the Pd (Psychopathic Deviate) scores remained the same and the Ma (Hypomania) scale tended to increase.

Two studies employ the MMPI to evaluate client-centered therapy. Mozak (1950) studied the MMPI profiles of twenty-eight clients under client-centered therapy for an average of fifteen interviews. Post-therapy MMPI profiles showed significant decreases on the D, Sc (Schizophrenia), Hs, Hy, and Pa (Paranoid) scales. The individual patterns were much as they were on the pre-therapy tests with a general drop in the scores on all scales.

Gallagher (1953) had forty-one students who came to the clinic for client-centered therapy counseled by advanced graduate students. The control group was 202 randomly selected college students. Seven of the scales showed significant differences between pre-therapy and post-therapy scores, but the therapy group remained more deviant than the randomly selected control group. The D, Hs, Pt, and F (validity scale) scores decreased significantly following therapy, while the K (a validity scale related to defensiveness) scale increased. In general, the feeling or discomfort scales (D, Pt, Hs) showed the greatest change in the direction of health; while the behavior or character disorder scales (Hy, Pd, Ma) showed the least amount of change.

Kaufmann (1950) compared the MMPI protocols of fifty-one university

students who were reported as improved by their therapists with fifty-four controls consisting of students in Psychology class. His comparison of pre-treatment and post-treatment protocols showed the following results. (1) The patient group had higher scores on all the scales except K on the pre-test protocols. (2) The D, Pt, and Sc scales most easily differentiated between patient and control groups and were most modifiable by therapy. The Hs showed the same tendency but to a lower degree. The K scale increased for both groups. The F scale differentiated the patients from the controls and is modifiable by therapy. The Hy and Pd scales tended to differentiate the groups, but were not modifiable by therapy. (3) The reduction of scores by therapy was not enough to obtain a mean score equal to the control group. In summary, the scales lowered by therapy included D, Pt, Sc, Hs, and F, with K increasing. The research limited itself to successful cases, so whether others would change similarly is not shown. The controls served no useful purpose other than providing a baseline that was never attained by the successfully treated patients.

Schofield (1950) conducted an attempt to validate the MMPI as a measure of change in therapy. One section of his study dealt with twenty-five psychoneurotics who were given the MMPI before and after an average of five therapeutic visits. No significant changes were seen on any of the clinical scales. Since the patients were seen for a brief period by junior medical students assigned to the psychiatric service for ten weeks, the adequacy of this procedure could be questioned. There is no assurance that results would be the same with trained and experienced therapists. Schofield (1953) also did an item analysis on the scales to find out which items

changed and which remained the same following therapy.

Barron (1953) compared the profiles of seventeen adult psychoneurotics who had been rated as Improved with sixteen profiles of others who had been rated as Unimproved. Only the Pa scale showed a significant difference between the groups. The unimproved group was, however, consistently higher on almost all scales, with a peak on the Sc scale and the average Pt and D T-scores being above 70. These profiles are associated with reactive depression and schizoid trends.

The study by Barron and Leary (1955) has often been cited by those who deny the value of therapy (cf. Eysenck, 1960). They used three groups selected from 150 patients who applied to a clinic for treatment; twenty-three were used as the control group consisting of persons who had been accepted for treatment but were on the waiting list, eighty-five who were received for group therapy, and forty-two who received individual therapy. All had a minimum of three months treatment and none were ill enough to require hospitalization. They were diagnosed commonly as psychosomatic neurotics, obsessive or schizoid characters, or phobics; less commonly as psychopathic characters or hysterics. They were given the MMPI before and after therapy or the waiting period. An examination of the sample shows that only those in therapy for three months were included, so the sample is biased by the exclusion of those who terminated before the three months were over. Initially the three groups did not differ significantly in the severity of their condition as indicated by the MMPI clinical scales. Significant decreases on the D, H_s, Hy, and L scales were found in records of patients

receiving psychotherapy of either individual or group nature. Group therapy showed significant decrease also on the Pa and Pt scales. Both groups showed a significant rise on the Es (Barron's ego-strength) scale. Individual psychotherapy showed a significant increase on the K scale. Barron and Leary also give percentage of improvement. On the three scales directly reflecting neurotic symptoms (Hs, D, Hy), 61 to 67 per cent of the persons changed in the direction of improvement. The Es score increased on the second testing in 66 per cent of the cases. None of the other scales changed in the "improved" direction for as much a 60 per cent of the cases. In general, the MMPI post-therapy scores of patients undergoing both individual and group therapy showed significant improvement over their pre-therapy scores.

Leary and Harvey (1956) later brought evidence to bear that therapy patients change more than non-therapy patients, but did not improve more. Cartwright (1956) re-analyzed the data of Barron and Leary showing that the variability of the therapy group was significantly greater than that of the control group. This could lead to the same interpretation as given by Leary and Harvey, that more people do change in therapy--but some improve while others get worse.

These studies using the MMPI to measure therapeutic change tend to support its usage for this purpose. The scales typically found to change most are those involving feeling or mood: Hs, D, Hy, and Pt. Some research reports that the Sc and Pa scales are also lowered. The K scale generally shows an increase.

The above studies have investigated the results of therapy with psychologically unhealthy persons of different grades of severity. Since the present study deals with normal range MMPI scores, the lowered ceiling would make changes in group means less likely. However, by matching pre and post scores for each individual, a more sensitive statistical test is made possible. On the basis of the literature cited, a lowering might be expected on the Hs, D, Hy, Pt, and Sc scales, an increase on the K scale, and the Pd and Ma scales would be less likely to change. On the basis of its content, the Social Introversion (Si) scale could be expected to be lower after therapy.

Both the MMPI and the 16 PF (Sixteen Personality Factor Questionnaire) have been used to evaluate therapy. Since both of these tests are used in this study, a comparison of the two tests would be useful to determine whether they are measuring the same things. There are several studies that attempt to explore the subscale correlations between these two, but they are not all in clear agreement. The 16 PF purports to measure sixteen independent aspects of personality that more or less reflect the basic source traits given by Cattell (1957) as empirically derived from factorial studies. In contrast, the MMPI is designed to isolate diagnostically differentiating scales (Dahlstrom and Welsh, 1960). Because of this complexity and different origins and purposes of the tests, scale correlations are quite mixed. Three prominent correlation studies are those done by Karson and Pool (1958), La Forge (1962), and Hundleby and Connor (1968). Other studies are by Cattell (1956), Cattell and Bolton (1969), Gocka and Marks (1961), and O'Dell and Karson (1969). Hundleby and Connor review (1968) the former studies of correlation by Karson and Pool (1958) and La Forge (1962). Both studies agree in showing a high negative correlation between the H scale of the 16 PF and

the Si scale on the MMPI (-.73, La Forge; -.69, Karson and Pool). Both studies show a fairly high positive correlation (greater than .40) between L and Si, D, and Pt; between O and Pt, Sc, Si, D, and F; between Q_4 and Si and Pt. A fairly high negative correlation is found between O and K, between Q_4 and K. (In each of these comparisons, the first letter refers to the 16 PF factor and the second refers to the MMPI scale.) The major finding of La Forge is that there is a high degree of correspondence between the variables manifesting anxiety on either test, specifically Pt, Sc, F, D, Si, and -K on the MMPI, and O, Q_4, L, and -C on the 16 PF. There is a common factor expressing anxiety or general maladjustment on both tests. Welsh's Factor A tries to capture this on the MMPI, and the Adjustment vs. Anxiety second-order factor expresses it on the 16 PF. Since these anxiety factors are common to both the MMPI and 16 PF and since reduction in anxiety is generally considered a sign of positive therapeutic change, these scales would be critical to the present study.

Specific Measures of Anxiety

Reduction of anxiety is a common indicator of positive therapeutic change. Welsh's First Factor (A) of the MMPI was derived on the basis of factor analytic studies (1956) that identified at least two main sources of variance running through the clinical scales. The first major source was identified as factor A, with high loadings from Pt and Sc scales and high negative loadings from the K scale. The source of variance appearing on Factor A appeared to be personal discomfort or distress. It was described as measuring anxiety or general emotional upset. Welsh then devised his

A scale from items that differentiated extreme scorers on a scale of general maladjustment.

The second source of variance on the basic scales Welsh identified as Factor R. Scales Hs, D, and Hy all have moderate loadings on R, and Ma has moderate negative loadings. This factor appeared to be related to dependence on mechanisms of denial or rationalization and lack of effective insight into self. Welsh developed his R scale to measure this second factor of variance.

Kassebaum, Couch, and Slater (1959) did a factor analysis on thirty-two scales of the MMPI on 160 college freshmen protocols. This study confirmed the basic validity of the A and R scales to measure their respective factors. The A scale showed its purest pattern of loadings on the first factor. These authors interpreted their first factor as a measure of ego weakness or ego strength. The R scale had its highest loadings on the second factor. This factor they interpreted as introversion or extraversion. The A scale loaded .88 on Factor I; the R scale loaded .69 on Factor II. The A scale correlated positively over .50 with scales F, D, Pd, Pt, Sc, and Si. It correlated negatively (-.70) with the K scale.

The 16 PF second-order factor of Adjustment vs. Anxiety provides a measure of anxiety that has been found to decline with therapy (Cattell, Rickels, et al., 1966). It may, however, be found high in normal persons and low in psychotics, though it is usually high with neurotics. Its chief factor loadings are C-, H-, L+, O+, Q_3-, and Q_4+. The factors of C-, O+, and Q_4+ are suggested by their content and meaning; the factors of L+, H-, and Q_3- have been added by experimental analysis. The present study will be concerned with factors C, O, and Q_4 since these have the highest factor

loadings on the anxiety factor and fit into the concept of anxiety. Factor C is described as "affected by feelings, emotionally less stable, easily upset, changeable, lower ego strength" on the low side and "emotionally stable, mature, faces reality, calm, higher ego strength" on the high side. Factor O is described as "self-assured, placid, secure, serene, untroubled adequacy" on the low side and "apprehensive, self-reproaching, insecure, worrying, troubled, guilt proneness" on the high side. Factor Q_4 is described as "relaxed, tranquil, torpid, unfrustrated, composed" on the low side and "tense, frustrated, driven, overwrought" on the high side.

Karson and Pool (1958), using Forms A plus B with seventy-one Air Force officers, found the following factor loadings on Factor I (Anxiety vs. Dynamic Integration) on the 16 PF: C -.84; O .81; Q_4 .80; M .72; L .65; Q_3 .34; H -.33; and I .32. These findings show many of the same factor loadings included in Cattell's study (1956). Karson and Pool (1967) found that the Pt scale on the MMPI correlated highly with C, O, Q_4, M, L, Q_3, H, and I factors on the 16 PF and that factors which load highly on Factor I of the 16 PF correlate with the Pt scale on the MMPI more than any other scale. La Forge (1962) found a high degree of correspondence between measures of anxiety on both 16 PF and MMPI scales, specifically Pt, Sc, D, F, Si, and -K from the MMPI correlated with O, Q_4, L, and -C on the 16 PF. Hundleby and Connor (1968) report that the 16 PF Adjustment vs. Anxiety second order factor correlated positively over .40 with scales D, Pt, and Si on the MMPI and negatively over -.40 with K. There is then a common factor expressing anxiety or general maladjustment prominent on both tests.

Karson (1960) compared normal and anxiety neurotic groups and found that factors C, O, Q_4, and L significantly differentiated the groups, all

of which are loading factors on the Adjustment vs. Anxiety second order factor.

To summarize these findings, the 16 PF provides a specific measure of anxiety in its second order factor Adjustment vs. Anxiety. This would be expected to decrease with therapy. Factor loadings that are consistently related to this second order factor are C-, O+, and Q_4+ and so after therapy an increase would be expected on C and a decrease on O and Q_4. Three other factors strongly associated with anxiety are L+, Q_3-, and H-. It could be expected that L would decrease following therapy while H and Q_3 would increase. Finally, some indication is given that M and I are positively related to good adjustment and so there is some reason to expect these scales to increase after therapy. Correlations were found between these factors on the 16 PF and scales related to anxiety on the MMPI.

Specific Measures of Ego Strength

Another characteristic commonly associated with positive therapeutic change is an increase in ego-strength. Barron (1953) originally designed a scale from items on the MMPI which was to predict the response of psychoneurotic patients to psychotherapy. But consideration of its contents and correlates suggested that it be used as an assessment in any situation where some estimate of adaptability and personal resourcefulness is wanted. It could be considered a measure of aspects of effective personal functioning usually meant by the term "ego-strength." He suggested that what was being measured was a capacity for personal integration. He found a high negative correlation with most of the MMPI scales of psychopathology, so that it was

suggested that the scale picks up a general factor of psychopathology, reflecting a degree of maladjustment irrespective of the differential diagnosis.

The Barron Es scale consists of sixty-eight items from the MMPI that correlated significantly with improvement in thirty-three neurotic patients. Improvement was reliably rated by two judges who were not the therapists, and the sample was dichotomized into improved and unimproved groups whose average Es scale differed significantly.

Studies on the ego-strength scale (Es) have been of two main kinds: those validating its prognostic ability for psychotherapy or its diagnostic differentiating ability and those examining its construct validity as a measure of "ego-strength." These latter studies have mainly been through comparisons with other "ego-strength" measures. Both lines of study have produced ambiguous results although with general support of the scale's basic value.

As a prognostic instrument to predict therapeutic change, Barron (1953) includes some preliminary validating studies. Barron and Leary (1955) found an increase in the Es scale for 66 per cent of the therapy cases in their study on the improvement between therapy and non-therapy groups. However, their control group, on the waiting list for therapy, also showed an increase on the Es scale for 55 per cent of the cases, which is not significantly different from the therapy treated groups.

Wirt (1955) had patients being discharged from a hospital rated independently by two psychiatrists as Unimproved, Improved, and Greatly Improved and received 203 patients with identical ratings. Using the Es score of MMPI protocols taken on their admission to the hospital, the Greatly

Improved group could be separated from the Unimproved group significantly at the .05 level.

Getter and Sundland (1962) applied the Es scale to fifty-nine therapy candidates, fifteen of whom were rated as unimproved, twenty-five improved, and nineteen remained untreated. No significant relationship was found between ego strength, improvement in therapy, or the number of hours of therapy.

Fiske, Cartwright, and Kirtner (1964) also found the Es scale wanting as a predictor of outcome with ninety-three subjects in client-centered therapy. Endicott and Endicott (1964) also determined that it was unrelated as a predictor of outcome with forty untreated patients and twenty-one patients in individual psychotherapy.

These studies then indicate that the Es scale does not stand up well as a predictor of therapeutic success. However, as a measure of positive therapeutic change, there is some evidence that the Es scale increases with therapy. Negative results of studies using the Es scale to predict therapy success do not of themselves disprove its use as a measure of therapeutic change.

Diagnostically, Quay (1955) found that the Es score differentiated a group of 74 psychiatric patients (without organic pathology) from a group of 92 student nurses and from a group of 41 psychiatric attendants at the .01 and .05 level respectively. However, they also found that it distinguished between attendants and nurses at the .01 level. Hawkinson (1961) found that the Es did not distinguish between psychoneurotic, manic-depressive, and schizophrenic groups. So although Barron's statement that the Es scale represents a general maladjustment factor might suggest its utilization

to differentiate between degrees of pathological severity, its actual ability to do so is not strongly validated.

Grace (1960) attempted to validate the Es scale by independent criteria that reflect possible components of "ego-strength," using fifty-two hospitalized patients with functional disturbances. He found that it related to independent measures of conceptual ability (giving abstract rather than concrete meanings to proverbs), to stress tolerance, and to recovery from stress. It was not related to verbal performance decrement associated with stress nor with tolerance of ambiguity.

Crumpton, Cantor, and Batiste (1960) did a factorial analysis of the Es scale and found fourteen factor loadings. They identified ambiguous, misleading, and non-contributory items on the scale, suggesting the omission of twelve items and the reversal of scoring for three items. However, the scale was associated with the effective functioning of students and less well associated with the non-effective functioning of psychiatric patients. They suggest that the scale is misnamed because it seems to measure the absence of ego-weakness rather than the presence of ego-strength. This absence of ego-weakness is interpreted as ego-strength. Normals do not admit to the weaknesses shown on the scale, whereas patients do. They note the loading of -.73 to the factor identified by Kassebaum, Couch, and Slater (1959) as "ego-weakness vs. ego-strength." These same authors found Es negatively correlated with all the clinical scales of the MMPI and the validating scales except K. It is negatively correlated over -.50 with D, Pt, Sc, and Si.

Several studies report comparisons between Barron's Es scale and other measures of ego strength. Tamkin (1957) compared the Es scale,

Rorschach F+%, and Pascal and Suttell's Bender-Gestalt Z-score, all of which purport to measure "ego-strength." He found that none of these differentiated between psychotic and neurotic groups. Nor were they correlated with each other significantly. Although they may be measuring something referred to as "ego-strength", they are apparently not measuring the same thing. Corotto and Curnutt (1962) essentially repeated Tamkin's comparison except with a normal population and again found the three measures unrelated. Roos (1962) compared the Es with Bender-Gestalt Z-scores and got a correlation of -.12 which supports Tamkin's findings.

Adams and Cooper (1962) compared the Es scale with Klopfer's Rorschach Prognostic Rating Scale (RPRS) and Cartwright's modification of the RPRS which correlates .85 with the complete RPRS. Published data on these two Rorschach scales show that they predict response to therapy better than the Es scale. The Es scale correlated .12 with the Cartwright modification of the RPRS and .13 with the complete RPRS, neither of which is statistically significant. Again, apparently the Es does not tap the same source as these two Rorschach measures.

Finally, in comparisons of different ego strength measures, Herron, Guido, and Kantor (1965) compared nine ego strength measures on forty college students. For our purposes, this study included the Barron Es scale, the 16 PF ego strength factor C, and the ego strength vs. ego weakness factor reported by Kassebaum (1959) on the MMPI. The correlations among these three measures are as follows:

16 PF ego strength: Barron's Es	-.06
16 PF ego strength: Kassebaum's factor	-.21
Barron's Es: Kassebaum's factor	+.06

Again, there is no significant correlations among these three measures of ego strength. The great number of insignificant correlations among the various measures of ego strength limits the ability to predict from one test to another. Consequently, ego strength must be regarded as a function of the testing instrument.

As with studies dealing with measures of anxiety, studies on Barron's Es have been done mainly with psychiatric patients and so say little about the function in a normal population.

Factor C on the 16 PF is one of "dynamic integration and maturity as opposed to uncontrolled, disorganized, general emotionality " (Cattell, Eber, and Tatsuoka, 1970, p. 83). It is characteristically low in all kinds of clinical disorders. A low C score is one of the loads to the Adjustment vs. Anxiety second order factor.

Both the MMPI and the 16 PF then provide an instrument to measure "ego strength", Barron's Es scale on the MMPI and Factor C on the 16 PF. The reported correlations between these two measures are low and so what is measured as "ego strength" appears to be a function of each measure. But both measures are associated with positive therapeutic change, although the Es scale does not stand up well as a predictor of therapeutic change.

Measurement of Motivation

Successful therapy is related to positive behavior change. For although reduction of anxiety or increase of ego strength may be regarded

as goals of therapy, they would hardly be adequate in themselves unless they were accompanied by a change in behavior. Behavior modification is in some way the goal of any therapy. When the change of behavior is used exclusively as the criterion of successful therapy, then therapy is considered successful when the designated symptom is removed or an undesirable behavior is extinguished or replaced. What is happening "inside" the person with regard to feelings, attitudes, or self-directing convictions is disregarded. Within the behavior modification approach to therapy, success is defined quite specifically according to the type of behavior that is to be changed.

In the type of group therapy investigated here a broad range of behavior changes might be envisioned as desirable depending on the style of life of the individual members in the group. To use behavior in itself as a criterion of change would require a unique definition of a behavior change desired for each member of the group and a way of determining whether it was effected. This would be impractical because of the subjective variations of desired changes, the difficulty in measuring them, and the many possible positive changes accruing from the group session which would not have been specifically included in the goals of therapy.

The behavior change produced in behavior modification therapy usually consists of a simple action or omission, such as dressing properly, not screaming at night, eliminating bedwetting. With normal adults there is rarely such a specific behavior that ought to be changed, unless it is a

particular overt habit such as smoking, over-eating, or stuttering. It is usually not at all clear what specific behavior ought to be changed. In any case, DC therapy in a group session is not directed to the changing of a specific habit that extends over time.

The changes that are produced are such that have their influence within the individual's uniqueness and reflect the complexity of his personality. They issue from the "inner" aspects of a person that are reflected in behavior such as attitude and convictions. An instrument that measures motivation is suited to reflecting these changes.

The TAT has been used as an instrument to assess motivation. Traditionally the story is broken down and themes are isolated. These themes, according to the psychoanalytic theory, are supposed to reflect the instinctive drives and impulses that are motivating the person. It is thought that when these themes are isolated, a picture of the needs and drives of the storyteller can be determined. This approach to TAT stories assumes that the themes, the drives and needs expressed in the story, are projections of the storyteller's own needs and drives. But this assumption simply has not been borne out in studies. The practice of identifying themes of the hero of the story with motives of the storyteller has not proven true. Furthermore, fractionating a story into themes destroys the basic unity of a story. It is apparent that the process of summing the number of themes to score the TAT makes the final score dependent on the length of the narratives.

What then is unique to a <u>story</u>, as opposed to other fantasy products such as a dream or "free association"? First, the story is a <u>conscious</u> and

creative product of imagination, in contrast to a dream. Secondly, the story is a unit with a plot and outcome, in contrast to "free association." These two characteristics of a story as an imaginative product suggest a reason to assume that it reveals the motivation pattern of a person.

Imagination is the ability of a person to mentally represent possibilities. These mental representations ("images") may be specific to a sensory modality, such as a visual picture, an imagined sound. We can also imagine what velvet feels like, how a lemon tastes, and what a fish market smells like. The modalities of touch, taste, and smell are more vividly imagined when the visual modality is added by picturing the velvet and the fish market and the lemon. And we can also imagine the sequence of motor movements, motor imagination, when we imagine biting into the lemon. In the ordinary course of events, we use imagination to plan for action. We imagine what we are going to do, what we are to wear, what tasks lie before us during the day. We imagine how best to execute the task, what plans we need to make. In using our imagination, we draw on our memory of what we have done in the past and what has happened as a consequence. We consider what alternatives are present and what resources are now available. We imagine future consequences, the good and bad effects of intended actions. Imagination then is a planning for action, a "picturing" of possibilities.

In telling a story a person is set with a problem situation which he imagines (the plot) and he resolves it in some way (the outcome). The story-teller draws upon his memory and imagination, and the story will reflect his characteristic way of solving problems, his dispositions toward various

situations, his attitudes and expectations about the way things turn out, and how he tends to act or sees others as acting. It reveals his pattern of motivation. The TAT picture provides a stimulus about which the person can weave a plot and draw an outcome. But how he does this depends on his own creative reorganization of his experience.

It is this process unique to storytelling that is missed when the TAT is considered as a product of fantasy where themes are linked as though the story were nothing but a patchwork of associated images strung together according to hidden affects disguised even to the person himself. "The story is not a collection of themes nor is it a string of memory images. A story is a creative reorganization of past sense impressions, a new product of human imagination." (Arnold, 1962, p. 13)

A motive is taken to be a "want that leads to action" (Arnold, 1962, p. 32). It is its link to behavior that distinguishes a motive from an emotion or a value. Values, needs, drives, and emotions do not necessarily lead to action. But a motive always includes a tendency to action because it is based on an appraisal of something as good for a particular action. The tendency to action, however, of a motive may be based on a deliberate appraisal of an object as good for me as well as a good appraised on the basis of a need, a drive, or an emotion. It differs from a value in that a value is appraised as good, but not necessarily for me. To distinguish motives from emotions and needs and values is necessary because we are more interested in behavior change after therapy than in value change or change in needs or emotions. For whereas motives are related to behavior, values and emotions or needs are not necessarily linked to a particular behavior.

For example, value change may occur without a person being motivated to act on these values. Needs and emotional attitudes may not change much, but how one acts on these needs and emotions may change, and this is important. An interpretation of the TAT based on how a person resolves a problem, i.e. gives an outcome to a plot, is more revealing of his motivational pattern than an approach that enumerates his purported needs and impulses without indicating how he deals with them.

Magda Arnold devised a system of measuring motivation using stories told to TAT cards called Story Sequence Analysis. Her theory is explained primarily in Emotion and Personality (Vol. II, 1960) and her method of using the TAT is set forth in Story Sequence Analysis (1962). The unit of interpretation in SSA is the story, rather than themes of the stories. The critical process in the method is extracting the import of each story. The import is a condensation of a story which preserves the kernel of the story and leaves out incidentals. Each story makes a point, and when this point is extracted in the import, and the imports are strung together in a sequence, a picture emerges of the person's attitudes and intentions to action.

> If each story is an imaginative exploration of various problems and their possible solutions, we must try to isolate what it is the storyteller is trying to say. What he says about the picture will reveal his convictions: what could be called the "moral" of the story. When this moral is applied to the storyteller's subjective circumstances, we arrive at the import (the meaning or significance) of the story. Once the import of each story is set down in sequence, it becomes possible to follow the storyteller's trend of thought, which reveals his habitual dispositions, the way he evaluates human actions, and the circumstances of man's life. The story import will show how the storyteller thinks people usually act and how he feels they should act; what actions he thinks right

> and wrong; what will lead to success, in his opinion, and what to failure; what can be done when danger threatens, and what things to strive for. In short, the story imports, taken in sequence, give a connected statement of the storyteller's principles of action, his motivational pattern.
> (Arnold, 1962, p. 51)

Skill in taking imports from stories is learned, for the import is objective in that it is abstracted as well as possible without adding from subjective interpretations. However, because of the examiner's focus on a particular problem around which the story is spun, imports as well as the sequence in which they are embedded may vary somewhat from examiner to examiner. Some stories are simple and indicate clearly what the storyteller is trying to say. In others, the point of the story is not at all obvious, outcomes are implied rather than stated clearly, stories border on monologues, and the import is difficult to score. Here skill in interpreting needs to be developed. When the stories are written with definite plots and outcomes, the meaning of the import is consistent when taken by different examiners although the particular wording of it may vary considerably. When the import is then scored, using the categories that have been devised, the variations in wording become unimportant because the content of the import, regardless of wording, receives the same score.

Scoring

There are two aspects of scoring: classifying the content of the story import and giving it quantitative value. Imports fall into four broad categories: I. Achievement, success, happiness, active effort and

their opposites; II. Right and wrong; III. Human relations; and IV. Reaction to adversity. These categories were derived empirically from the records of high and low achievers, from effective and ineffective teachers, from offenders and non-offenders among Navy recruits, and from efficient and inefficient executives in a government project. Over a period of ten years these categories of imports were organized into a scoring system with various headings and sub-headings to include the types of imports found in stories.

Quantitatively, each story has four possible scores ranging from -2 to +2. These scores derive from the types of imports found in positively motivated persons as contrasted with those found in negatively motivated persons and were derived empirically from the contrasting groups mentioned above.

When the scores for each story on a record are algebraically summed, a consistency score is obtained which indicates how consistently the story-teller reveals a positive or negative attitude. If all of the stories told are positively scored, the consistency score will be positive. When all the stories told are scored negatively, the consistency score will be negative. But when the storyteller reveals imports whose positive and negative scores cancel out, he has zero consistency, neither definitely positive nor definitely negative. In the consistency score, two factors are involved: the intensity of the individual story's positive or negative score and the number of stories included in the sequence.

In order make the scores from records of different lengths comparable, a linear transformation is made which does not change the nature of the

raw scores, but gives an equivalent unit that takes into account the number of stories included. This is done by making a proportion from the ratio of the actual scale units obtained which can be derived from the consistency score over the maximum units obtainable. This ratio is multiplied by 200 which gives an index where 100 is the arbitrary zero point for consistency, all negative consistency scores will give an index value below 100, and all positive consistency scores will give values above 100, up to the scale limit of 200.

This Motivation Index (M.I.) is calculated according to the formula:

$$\frac{n^o}{n^p} \times 200$$

where n^o is the number of units obtained (derived from the final score), and n^p is the number of units obtainable or possible. The n^p is four times the number of stories used: e.g. for a 20-story sequence, the n^p is 80; for a 19-story sequence, it is 76. Arnold provides a table to make this transformation easy (Arnold, 1962, pp. 146-147).

Reliability

Arnold tested the reliability of Story Sequence Analysis by odd-even and split-half methods. With 99 TAT records of efficient and inefficient teachers, she found a correlation of .86 between odd and even numbered imports and between first and second halves of the records. In 51 TAT records of seventh grade children she found an odd-even correlation of .79

and a split-half correlation of .61.

Validity

The scoring system of the SSA was developed on the basis of studies distinguishing matched pairs of high and low achievers (Snider, 1954; Brown, 1953; McCandlish, 1958). TAT imports given by high achievers were scored positively; those given by low achievers were scored negatively. And these were arranged into categories so that the scoring system could be correlated with other criteria. To differentiate low and high degrees of positive and negative motivation, the scoring system was expanded to involve four steps of intensity with two steps of negative motivation (-2,-1) and two steps of positive motivation (+1, +2). Garvin (1960) found a correlation of .85 for men and .83 for women between the TAT scores of seniors in college and their junior year grade-point average. Quinn (1962) found correlations of .61 and .59 between the TAT scores of scholastics and their ratings of possible success by superiors and peers. Dulin (1968) compared the TAT records of 100 male freshmen in college and their subsequent grade-point average throughout four years. Because of the loss of subjects during the following years, the number dropped from 100 in the first year to 75 in the second, 54 in the third, and 42 in the fourth year. The MI-GPA correlation from freshman to senior year was .84, .65, .62, and .61 respectively. In order to investigate why the drop between first and second year occurred and then why the correlation leveled off in the following years, Dulin selected a sample of 39 students who remained through all four years for whom he

had complete records. The MI-GPA correlations reported for this group from freshman through senior year were .67, .46, .46, and .59 respectively. This selected sample also shows the highest correlation in the freshman year, a fairly steep drop between first and second year, and a leveling for the following three years. The MI therefore does have a positive correlation with records of academic achievement as recorded by grade-point average. This correlation is higher than either the correlation between intelligence (as measured by the Henmon-Nelson intelligence test) and grade-point average, or between intelligence and MI. The correlations between intelligence and GPA for the selected group who remained over four years is generally about 0.1 below the correlations between MI and GPA in each case. Since remaining in college for four years is in itself an indication of positive motivation and adequate intelligence, these similarities between correlations of MI and GPA with correlations between intelligence and GPA would be expected in this group. Dulin's findings support the validity of SSA as a measure of motivation related to academic performance.

Fields (1965) compared the TAT records of twenty-five unwed mothers from 15 to 19 years old with a control group of 25 girls currently institutionalized for behavior problems but who had never been pregnant out of wedlock. The TAT records were used to confirm certain hypotheses about the motivational patterns of unwed mothers which would distinguish them from institutionalized girls with other behavior problems. For scoring, she categorized imports according to the activity and passivity expressed in the stories. Unwed mothers were found to exhibit the same degree of negative motivation as other institutionalized girls, but they were three times

more likely to have patterns of "passivity." Whereas the degree of negative motivation in the two groups was similar, unwed mothers were more passive.

Ramirez (1970) used SSA to evaluate the outcome of client-centered therapy. Thirty outpatients who applied for therapy at the Counseling Center of the University of Chicago were assigned to twelve therapists using the client-centered orientation. Nineteen of the subjects were male, eleven were female. The age range was from twenty to forty years with a median of 26.8 years. They were above average in intelligence and education with college and post-graduate backgrounds. Sixteen were students at the University and fourteen were in different professions in the community. They would be classified as mostly psychoneurotic, some as borderline psychotic, and a small group as normal with slight emotional disturbances.

Thirty control subjects were matched according to age, sex, educational status and socio-economic status. Fifteen were male and fifteen female; fifteen students and fifteen non-students.

The TAT was given to each subject three times, once before therapy, a second time at the end of therapy, and a third time as a follow-up after therapy. The control group was tested at similar intervals. The average time between first and second testing was about six months; between the second testing and the third TAT as follow-up averaged about seven months.

The subjects in therapy received at least six sessions and at the end each was rated as success or failure by the therapist on a nine point scale: 1 indicating complete failure and 9 indicating marked success. Those rated 6 or above were included in the success group; those rated 5 or below were included in the failure group. By this classification, there were 19 successful clients and 11 failures.

Ramirez found that those persons who received therapy showed a significant increase in their MI scores between pre-therapy and post-therapy (at the .05 level). There was a slight decrease in the MI from the post-therapy score to the follow-up, but the decrease was not significant. The MI scores at follow-up were still higher than the pre-therapy scores, but the difference was not significant. As a group, those who received therapy increased their Motivation Index significantly after therapy, but there was a slight decrease between post-therapy and follow-up testing. This decrease was not significant and did not reach the pre-therapy level.

The controls who took the TAT at approximately equal intervals but did not receive therapy did not show a significant increase in their MI between the first testing and either the second or third testing. Instead, they showed a decrease between first and second testing.

When the therapy group was broken down into those who were rated as success and those rated as failure, the differences were sharper yet for those who were rated as successful in therapy. Those rated as successes showed an increase in MI between pre-therapy and post-therapy at the .002 level. The increase in MI between pre-therapy and follow-up was significant at the .05 level. The change from post-therapy to follow-up was random showing that the therapeutic change was maintained through the follow-up.

Those who received therapy but who were rated as failures showed a significant decrease in MI between pre-therapy and post-therapy, and between pre-therapy and follow-up. There was a decrease in the MI between post-therapy and follow-up but it was not significant.

When comparing the MI of the whole experimental group (success and failure combined) with the controls at the three testing points, there was no significant difference at any point, although the experimental group showed a tendency toward lower MI's at pre-therapy. There seems to be a tendency for those who underwent therapy in general to have lower MI's than controls and particularly for those who were rated as successful therapy subjects.

It should be noted that the major finding that persons receiving client-centered therapy showed an increase in their motivation was confirmed on the basis of the experimental group as a whole, i.e. with success and failure cases combined. There was a significant increase in the MI between pre-therapy and post-therapy, but this change was not maintained through to the follow-up. But when the group undergoing therapy were subdivided into success and failure cases on the basis of therapist ratings, the change in the success group was very significant between pre-therapy and post-therapy and was maintained through the follow-up. The failure group, on the other hand, decreased significantly from pre-therapy to post-therapy, and decreased slightly through the follow-up. These results point to the advantage of distinguishing between success and failure cases among those who underwent therapy. It also suggests that therapy is not a neutral intervention, but may decrease motivation as well as increase it. This supports the findings of Leary and Harvey (1956), Cartwright (1956), and others that therapy leads to change; but whereas some improve through it, others get worse.

Ramirez found that the MI was an effective instrument for measuring therapeutic change in client-centered therapy using the therapist ratings

of success and failure as a criterion.

Ramirez's study has much in common with the present study in that both use the SSA of the TAT to evaluate the outcome of therapy. Some differences between the two studies are:

1. The present study is using a single session of DC group therapy as the therapeutic variable rather than individual client-centered therapy extended over several sessions.

2. The present study involves the same therapist with three different groups rather than twelve different therapists.

3. The present study uses only pre-therapy and a one month post-therapy evaluation. A follow-up evaluation is not included so longer range stability of change cannot be evaluated.

4. The subjects of the present study are normal individuals as determined by the MMPI profiles and clinical interviews. Ramirez's therapy group included psychoneurotic individuals although none would be diagnosed as having severe pathologies.

5. The experimental and control groups in the present study are all male, but of similar educational and intellectual range as Ramirez's study. Ramirez had both male and female subjects in his groups and needed to show that sex differences were not significant.

6. Ramirez used a full 20-story TAT record obtained over a two-day testing period, which the subjects gave by talking into a microphone for a five minute period. These records were transcribed later. After doing intra-judge and inter-judge reliability studies, it was decided to use the first eleven stories that were re-scored by the experimenter from each record. In the present study, thirteen cards were used, the stories were

written by the subjects in a seven-minute time limit per story, and they were written in one sitting. The stories were scored independently by two persons. Where discrepancies were discovered, these were conferenced to determine the final scoring for each story.

7. Ramirez uses a therapist rating to distinguish between success and failure cases. The present study does not distinguish successes and failures among those who participated in a DC therapy session, but it only compares those participating in the session with the controls who did not.

Specific Hypotheses

Participants in a disclosure-confrontation group session will show a decrease in anxiety, an increase in ego strength, and an increase in positive motivation after such a session. Control subjects over an equivalent time will not show significant changes in anxiety, ego strength, or level of positive motivation. These changes will be reflected in the following measures:

(1) Participants in a DC session will show a decrease in anxiety as reflected in lowered scores on the MMPI Welsh A scale and the 16 PF Adjustment vs. Anxiety second order factor. Control subjects will not significantly change on these scales.

(2) Participants in a DC session will show an increase in ego strength as reflected in raised scores on the MMPI Barron Es scale and the 16 PF Factor C. Control subjects will not significantly change on these scales.

(3) Participants in the DC session will show an increase in positive motivation as reflected in a raised Motivation Index on the TAT Story Sequence Analysis. The control subjects will not significantly change on their Motivation Index.

CHAPTER III

METHOD

Subjects

The subjects of this study are seventy unmarried males in their last two years of undergraduate studies or one year following graduation at a small college. They were from 21 to 24 years of age. None of them had psychiatric histories and all were within normal range of mental health as assessed through test data and clinical observation. The thirty-five subjects who participated in group sessions are distributed over three separate groups, thirteen members of one session, twelve members in a second session, and ten in a third. Data from the three sessions was combined to form a larger N for statistical purposes. The three disclosure-confrontation sessions were conducted by Donald J. Tyrell with a co-therapist between February 1970 and January 1971. Two of the groups were in their senior year at college when the participated in the session and the third was out of undergraduate college work one year. No subject participated in more than one session.

The control group consisted of other students in the same college, most in their junior year and a few in their senior year. Both the students who participated in sessions and those volunteering as controls knew one

another before the session and afterwards since they were living near one another and attended many of the same classes. The fact that these students, both members of the control group as well as members of the experimental group, had contact with one another before and after the session could account for some contamination of the control group. Attitude changes in the participants of the session might lead to changes in the control group, so this "contamination" of a positive nature would make any differences between the two groups more significant.

The experimental group then consists of 35 students who participated in a DC session; the control group consists of 35 students from the same college who did not participate in a session.

Procedure

All subjects were given the Minnesota Multiphasic Personality Inventory (MMPI), the 16 PF Personality Factor Questionnaire (16 PF) Form A, and the Thematic Apperception Test (TAT). The TAT was administered according to the instructions in Arnold's Story Sequence Analysis using thirteen cards (1, 2, 3BM, 4MF, 6BM, 7BM, 8BM, 10, 11, 13MF, 14, 16, and 20 shown in this order). Before showing the first picture, these instructions were given:

> This is a test of your creative imagination. You will see thirteen pictures, one after another. As you look at each picture, write as dramatic a story as you can about it. Tell what has led up to the scene shown in the picture and what is happening now. What are the thoughts and feelings of the people in the picture? What will be the outcome?
>
> Since we are interested in your creative imagination, be sure to tell a story with a plot and an outcome. Do not just describe the picture. Try to write a story and not a piece of conversation.
>
> You will have seven minutes for each story. Be sure to write something about each picture. If you can't think of anything for

one of the pictures, write that down, too.
(Arnold, 1962, p. 49)

After the first story has been written, the instructions are repeated stressing that a story with a plot and an outcome be written, giving what led up to the scene, what is happening in the picture, and how it will turn out.

The experimental group took the tests before the session and were re-tested one month following it. The control group took the tests and were re-tested after an equivalent one month period, with no session in between.

Measures

A battery of tests including the MMPI, 16 PF, and TAT has been used as a selection procedure along with a Sentence Completion Form and a clinical interview to screen participants for DC group sessions. This is in part the rationale for using the selection of these three tests for the evaluation of the therapy as well, since parsimony and the clinical situation are well served if the instruments used for selection can be also used for evaluation. The review of literature confirms advantages to be had from this test battery. A side advantage of this study would be an evaluation of this battery as an effective selection procedure.

The MMPI was computer scored and T-scores are used. From the MMPI, measures related to anxiety and ego strength were investigated. This is primarily the Welsh A scale and the Barron Es scale. Consideration has been given to other scales suggested by the review of literature to be

related to anxiety or therapeutic change, namely Hs, D, Hy, Pt, Sc, and K.

The 16 PF Form A was computer scored and the scores in stens recorded according to college norms. The anxiety measure is primarily the second order factor Adjustment vs. Anxiety. Consideration has been given to its loading factors related to anxiety: Factor C, Emotional Instability vs. Ego Strength; Factor O, Self-assured vs. Apprehensive; Factor Q_4, Relaxed vs. Tense; Factor L, Trusting vs. Suspicious; Factor Q_3, Undisciplined Self-conflict vs. Controlled; Factor H, Shy vs. Venturesome. Factor C on the 16 PF is used as the measure of ego strength.

Motivation has been measured by the Motivation Index derived from the imports of the TAT stories scored according to Magda Arnold's Story Sequence Analysis. The TAT records were scored by blind analysis, that is without knowing which group the record being scored belonged to. The imports were taken and scored independently by two persons. After independent scoring was completed, the scoring was compared and discrepant scores were conferenced with Dr. Arnold to determine the final score.

CHAPTER IV

RESULTS

Although hypotheses have been formulated in terms of measures of anxiety, ego strength, and motivation, the results of all sixteen factors of the 16 PF and for all ten clinical scales and three validity scales of the MMPI are reported. This prevents the experimental bias of reporting only on measures that support the desired results and discarding those that are less supportative.

The mean and standard deviation for each group on initial and final testing for each factor of the 16 PF are given in Tables 2 and 3. Table 1 provides a reference to what the factors of the 16 PF are intended to measure. Table 2 shows that the control group on initial testing showed its lowest mean on factor Q_3, 4.257, indicating that the group was more casual and careless of protocol than the average college population. Units are in stens so the normal college mean would be 5.5. The highest mean is on factor I, 7.446, which indicates that the control group is more tender-minded than the college population in general. On factors G (expedient), Q_1 (conservative), and Q_3 (casual), the control group means are in the fourth sten, which is below the college norm mean. On factors A (outgoing), I (tender-minded), M (imaginative), O (apprehensive), Q_4 (tense), and the second-order Anxiety factor, they were in the sixth sten or above. (In naming the 16 PF factor, the adjective selected to describe the factor will depend upon which side of 5.5 the mean referred to lies.)

TABLE 1

Factors of the 16 PF

	A person with a low score is described as:	A person with a high score is described as:
A	RESERVED, deteached, critical, cool	OUTGOING, warmhearted, easy-going, participating
B	LESS INTELLIGENT, concrete-thinking	MORE INTELLIGENT, abstract-thinking, bright
C	AFFECTED BY FEELINGS, emotionally less stable, easily upset	EMOTIONALLY STABLE, faces reality, high ego strength
E	HUMBLE, mild, obedient, conforming	ASSERTIVE, independent, aggressive, stubborn
F	SOBER, prudent, serious, taciturn	HAPPY-GO-LUCKY, heedless, gay, enthusiastic
G	EXPEDIENT, a law to himself, by-passes obligations	CONSCIENTIOUS, persevering, staid, rule-bound
H	SHY, restrained, diffident, timid	VENTURESOME, socially bold, uninhibited, spontaneous
I	TOUGH-MINDED, self-reliant, realistic, no-nonsense	TENDER-MINDED, dependent, over-protected
L	TRUSTING, adaptable, free of jealousy, easy to get on with	SUSPICIOUS, self-opinionated, hard to fool
M	PRACTICAL, careful, conventional, proper	IMAGINATIVE, wrapped up in inner urgencies, careless of practical matters
N	FORTHRIGHT, natural, artless	SHREWD, calculating, penetrating
O	PLACID, self-assured, confident, serene	APPREHENSIVE, worrying, depressive, troubled
Q_1	CONSERVATIVE, respecting established ideas	EXPERIMENTING, critical, liberal, analytical, free-thinking
Q_2	GROUP-DEPENDENT, a "joiner" and good follower	SELF-SUFFICIENT, prefers own decisions, resourceful
Q_3	CASUAL, careless of protocol, untidy, follows own urges	CONTROLLED, socially-precise, self-disciplined, compulsive
Q_4	RELAXED, tranquil, torpid, unfrustrated	TENSE, driven, overwrought, fretful

Second order factor

ADJUSTMENT	ANXIETY

TABLE 2

16 PF: GROUP MEANS AND STANDARD DEVIATIONS

CONTROL GROUP

Pre-test			Post-test		
Factor	Mean	S.D.	Factor	Mean	S.D.
A	6.083	2.30	A	6.057	2.27
B	5.954	2.16	B	7.503	1.53
C	5.069	1.92	C	6.429	2.70
E	5.637	1.71	E	5.980	1.87
F	5.540	1.67	F	6.751	1.87
G	4.717	1.71	G	4.380	2.11
H	5.029	1.89	H	6.237	2.47
I	7.446	2.58	I	7.291	1.90
L	5.954	2.11	L	5.120	2.16
M	6.189	2.04	M	7.131	1.82
N	5.383	1.86	N	4.840	1.81
O	6.454	2.18	O	4.489	2.19
Q_1	4.551	1.73	Q_1	5.009	1.71
Q_2	5.374	1.84	Q_2	5.031	1.71
Q_3	4.257	1.96	Q_3	5.583	1.88
Q_4	6.503	2.26	Q_4	4.697	2.60
Anxiety	6.557	2.05	Anxiety	4.463	2.56

Units in stens.

N = 35

TABLE 3

16 PF: GROUP MEANS AND STANDARD DEVIATIONS

EXPERIMENTAL GROUP

Pre-test			Post-test		
Factor	Mean	S.D.	Factor	Mean	S.D.
A	5.734	1.98	A	6.029	2.05
B	7.043	2.05	B	7.194	1.78
C	4.980	2.41	C	6.031	2.17
E	5.597	2.15	E	6.311	1.95
F	6.186	2.36	F	5.863	1.85
G	4.197	1.94	G	4.943	1.98
H	4.931	2.67	H	5.820	2.25
I	7.280	1.94	I	7.660	1.81
L	5.826	2.19	L	4.791	2.21
M	6.609	1.81	M	6.908	1.63
N	4.029	2.12	N	4.089	1.84
O	6.451	2.22	O	4.614	2.19
Q_1	4.763	1.68	Q_1	4.589	1.09
Q_2	5.706	1.69	Q_2	5.346	1.81
Q_3	4.686	1.59	Q_3	4.863	1.84
Q_4	6.554	2.39	Q_4	5.691	2.29
Anxiety	6.483	2.34	Anxiety	5.114	2.12

Units in stens.

N = 35

The control group appears to be quite tense or anxious (high means on factor O, Q_4, and Anxiety) on the initial testing.

On the second testing, the lowest mean for the control group was factor G (expedient) which is 4.380 and the highest mean was on factor B (more intelligent) which is 7.503. The factors which were in the fourth sten or below include G (expedient), N (forthright), O (placid), Q_4 (relaxed) and the second-order Anxiety factor. On second testing the control group is considerably less tense seen in the reduction particularly of factors O, Q_4, and Anxiety. These factors, among the highest means on initial testing, are among the lowest means on second testing. The increase in intelligence, factor B, could be related to this reduction in anxiety as well as the learning effect on re-testing. The fact that the control group shows the highest means in scales related to anxiety on initial testing and its lowest means on these same scales on second testing needs to be explained. It is suggested that this may be related to the specific testing situation which was anxiety-producing, but more results need to be presented to support this suggestion.

The means of the experimental group, shown in Table 3, before they participated in the group session show the lowest mean on factor N (forthright), 4.029 stens. The highest mean, as in the control group, is factor I (tender-minded), 7.280 stens. The factors that have low means in the fourth sten are C (affected by feelings), G (expedient), H (shy), N (forthright), Q_1 (conservative), and Q_3 (casual). The factors that have high means are B (more intelligent) and I (tender-minded), both in the seventh sten, and F (happy-go-lucky), M (imaginative), O (apprehensive), Q_4 (tense),

and the second-order Anxiety factor.

On the post-testing, following participation in the group session, the experimental group again shows its lowest mean on factor N (forthright), and its highest mean on factor I (tender-minded). The factors showing low means in the fourth sten are G (expedient), L (trusting), N (forthright), O (placid), Q_1 (conservative), and Q_3 (casual).

Both experimental and control groups have high means on factors related to anxiety on the initial testing which decrease on second testing. The experimental group shows however a high mean of 7.043 on factor B (intelligence) on initial testing which increases only slightly on second testing to 7.194. The control group's mean of intelligence on initial testing is 5.954 and increases to 7.503 on second testing which is a mean equivalent to that maintained by the experimental group over both testing periods. Since the control group and the experimental group both come from the same college population and were not screened on the basis of intelligence, there is no reason to assume a difference in basic intelligence between the groups. However, if it is hypothesized that in the initial test situation, anxiety had a disturbing effect on intellectual functioning, then this lowered mean of the control group on initial testing could be considered an effect of the test situation anxiety. This is in accord with the high anxiety related scores the group shows which reduce considerably on second testing. It is to be noted that members of the control group were tested together on the same occasion, whereas the experimental group was tested as three different subgroups on different occasions, before these subgroups made their respective sessions. It could be that the lowered intelligence score and the higher anxiety-related scores of the control group are exaggerated because

of a specifically anxiety-inducing test situation which is something of an artifact.

Both groups show consistently lower scores on factors G (expedient), N (forthright), and Q_1 (conservative) and consistently higher scores on factors A (outgoing), B (more intelligent), and I (tender-minded) than the general college norm.

Tables 4 and 5 give the means and standard deviations of pre-testing and post-testing for both groups on the MMPI. Since the MMPI scores are T-scores, the range of means recorded shows quickly that both groups are within normal distribution. The only scale that consistently is above the T-score of 60 is the Mf scale. Since college students generally score higher than the general population on the Mf scale, these means are easily explained. The only other means that are above 60 are in the experimental group, where on initial testing the Pt mean is 60.685 and after the session the Ma mean is 60.314.

On initial testing the experimental group has a low mean of 44.257 on the L scale and the control group has low means of 48.000 and 48.600 on the L and Hs scales respectively. Otherwise all means are within the T-score range between 50 and 60.

On second testing, the control group shows a T-score mean below 50 on the L, Hs, D, and A scale. The experimental group shows a T-score mean below 50 on approximately the same scales, L, Hs, and A.

The MMPI does not reflect the elevation on scales related to anxiety in the control group as does the 16 PF. This lends some support to the hypothesis that the elevated anxiety reflected in the 16 PF is related to the testing situation. The mean of the control group on the A scale of the

TABLE 4

MMPI: GROUP MEANS AND STANDARD DEVIATIONS

CONTROL GROUP

Pre-test			Post-test		
Scale	Mean	S.D.	Scale	Mean	S.D.
L	48.000	5.57	L	48.400	6.32
F	54.257	7.75	F	53.057	7.00
K	53.828	9.27	K	56.657	9.49
Hs	48.600	9.38	Hs	47.085	7.42
D	53.828	12.17	D	49.171	10.68
Hy	54.685	7.55	Hy	56.085	7.07
Pd	55.428	13.19	Pd	52.371	11.27
Mf	68.457	10.34	Mf	65.228	11.09
Pa	54.514	8.77	Pa	55.228	7.81
Pt	56.085	11.45	Pt	52.657	11.96
Sc	56.285	12.29	Sc	52.542	10.44
Ma	58.742	8.77	Ma	57.400	10.86
Si	51.914	9.64	Si	50.400	9.06
A	52.771	12.12	A	48.771	12.33
Es	54.114	9.00	Es	57.371	8.54

Units are T-scores.

N = 35

TABLE 5

MMPI: GROUP MEANS AND STANDARD DEVIATIONS

EXPERIMENTAL GROUP

Pre-test			Post-test		
Scale	Mean	S.D.	Scale	Mean	S.D.
L	44.257	6.32	L	47.457	7.07
F	55.057	5.57	F	52.085	5.10
K	52.200	9.11	K	56.257	9.00
Hs	50.028	7.35	Hs	47.857	6.71
D	55.942	12.12	D	50.828	9.75
Hy	57.057	5.83	Hy	57.353	12.21
Pd	56.542	10.20	Pd	55.885	9.17
Mf	65.571	10.82	Mf	68.342	10.25
Pa	54.971	6.24	Pa	54.342	6.63
Pt	60.685	11.58	Pt	53.914	9.85
Sc	59.914	12.04	Sc	53.485	9.38
Ma	59.714	10.25	Ma	60.314	7.42
Si	56.657	11.70	Si	50.542	8.89
A	55.914	11.92	A	49.828	6.78
Es	54.000	9.64	Es	58.142	7.48

Units are T-scores.

N = 35

MMPI is 52.771, with a slight elevation in Pt (56.085), Sc (56.285) and Ma (58.742). The experimental group, according to MMPI means, appears more anxious with the means of A (55.914), Pt (60.685), Sc (59.914), and Ma (59.714) in each case being higher than the corresponding means of the control group.

It appears that at initial testing, the 16 PF shows the control group as being more anxious than the experimental group and the MMPI shows the experimental group as being more anxious than the controls. This difference could be reconciled if we hypothesized that the 16 PF reflects a test-situation anxiety and the MMPI reflects a more general personal anxiety. This would be in accord with what one might expect of persons anticipating participation in a group therapy session

When the two groups are compared by t-test on the difference between means on initial and second testing, the results are seen on Tables 6 and 7. A quick glance shows that in no case do these differences between group means reach the .05 level of significance.

The difference in means and the t-test of significance for the 16 PF is shown in Table 6. Although there is no difference that is statistically significant between the groups, the direction of the differences between means of the groups can be inspected. The greatest differences, when a t-test score of 0.200 or above is used as a cutting-score, are shown on factors B, F, G, and N on initial testing. The experimental group tends to be more intelligent (B), more happy-go-lucky (F), more expedient (G), and more forthright (N). On second testing, the experimental group is less happy-go-lucky (F) than the control group, less forthright (N), more conservative (Q_1), more casual (Q_3), and more tense (Q_4). These differences

TABLE 6

16 PF: t-TEST ON DIFFERENCES BETWEEN GROUP MEANS

OF EXPERIMENTAL AND CONTROL GROUPS

Pre-test				Post-test			
Factor	Difference in Means	t-test	Proba-bility	Factor	Difference in Means	t-test	Proba-bility
A	-0.349	-0.115	NS	A	-0.029	-0.009	NS
B	+1.089	+0.567	NS	B	-0.309	-0.127	NS
C	-0.089	-0.029	NS	C	-0.397	-0.115	NS
E	-0.040	-0.014	NS	E	+0.331	+0.123	NS
F	+0.646	+0.223	NS	F	-0.889	-0.339	NS
G	-0.520	-0.202	NS	G	+0.563	+0.195	NS
H	-0.097	-0.030	NS	H	-0.417	-0.121	NS
I	-0.166	-0.051	NS	I	+0.369	+0.141	NS
L	-0.129	-0.042	NS	L	-0.328	-0.106	NS
M	+0.420	+0.154	NS	M	-0.223	-0.091	NS
N	-1.354	-0.480	NS	N	-0.751	-0.291	NS
O	-0.003	-0.001	NS	O	+0.126	+0.041	NS
Q_1	+0.211	+0.088	NS	Q_1	-0.420	-0.208	NS
Q_2	+0.332	+0.133	NS	Q_2	+0.314	+0.126	NS
Q_3	+0.429	+0.170	NS	Q_3	-0.720	-0.274	NS
Q_4	+0.051	+0.016	NS	Q_4	+0.994	+0.287	NS
Anxiety	-0.074	-0.024	NS	Anxiety	+0.651	+0.196	NS

df = 68

$p < .05 = 2.000$

Note: Positive sign indicates that the experimental group mean is higher; negative sign indicates that the experimental group mean is lower.

TABLE 7

MMPI: t-TEST ON DIFFERENCES BETWEEN GROUP MEANS

OF EXPERIMENTAL AND CONTROL GROUPS

Pre-test				Post-test			
Scale	Difference in Means	t-test	Proba-bility	Scale	Difference in Means	t-test	Proba-bility
L	-3.743	-0.444	NS	L	-0.943	-0.099	NS
F	+0.800	+0.083	NS	F	-0.972	-0.112	NS
K	-1.628	-0.125	NS	K	-0.400	-0.031	NS
Hs	+1.428	+0.119	NS	Hs	+0.772	+0.077	NS
D	+2.114	+0.123	NS	D	+1.657	+0.115	NS
Hy	+2.372	+0.248	NS	Hy	-0.371	-0.026	NS
Pd	+1.114	+0.066	NS	Pd	+3.514	+0.242	NS
Mf	-2.886	-0.192	NS	Mf	+3.114	+0.206	NS
Pa	+0.457	+0.042	NS	Pa	-0.886	-0.087	NS
Pt	+4.600	+0.282	NS	Pt	+1.257	+0.081	NS
Sc	+3.629	+0.210	NS	Sc	+0.943	+0.067	NS
Ma	+0.972	+0.072	NS	Ma	+2.914	+0.222	NS
Si	+4.743	+0.312	NS	Si	+0.142	+0.011	NS
A	+3.143	+0.184	NS	A	+1.057	+0.075	NS
Es	-0.014	-0.001	NS	Es	+0.761	+0.067	NS

df = 68

$p < .05 = 2.000$

Note: Positive sign indicates that the experimental group mean is higher; negative sign indicates that the experimental group mean is lower.

are not at the .05 level of significance and must be interpreted in the context of where the mean is located. When the mean is near 5.5 stens, e.g. 5.691 as the Q_4 mean of the experimental group on post-testing, the adjective "more-tense" is somewhat misleading.

The t-test of differences between group means on the MMPI is given on Table 7. Again there is no statistically significant difference between the two groups either before or after the session. But inspection shows some tendencies in differences between the groups. On initial testing the greatest differences between the groups are on scales L, Hy, Pt, Sc, and Si. The experimental group is lower on the L scale, and higher on Hy, Pt, Sc, and Si using 0.200 as a cut-off score on the t-test.

When comparing control group with experimental group the standard t-test between groups is used. But when comparing scores of subjects within a group, either experimental or control, on pre- and post-testing, a direct-difference application of the t-test is appropriate and more powerful. When the same subjects are used for the first and second tests, then one can obtain the difference between raw scores for each subject. This does not change the difference between means of the groups, but it does affect the variability of the distribution of direct differences. The standard error of the mean difference is used to compute the t-value. It reduces the degrees of freedom since paired raw scores are involved.

The results of the t-test on direct differences for both groups on the factors of the 16 PF are given in Table 8. Those who participated in the group session show significant changes at the .05 level on factors E, G, H, and Q_4. They are significantly more assertive (E), more conscientious (G), more venturesome (H), and less tense (Q_4) than they were before

TABLE 8

16 PF: t-TEST ON DIRECT DIFFERENCES OF INDIVIDUAL SCORES

Experimental Group				Control Group			
Factor	Difference in Means	t-test	Probability	Factor	Difference in Means	t-test	Probability
A	+0.294	+1.289	NS	A	+0.026	+0.134	NS
B	+0.151	+0.420	NS	B	+1.549	+5.160	.01**
C	+1.051	+3.184	.01**	C	+1.360	+4.896	.01
E	+0.714	+2.100	.05*	E	+0.343	+1.710	NS
F	-0.323	-0.847	NS	F	+1.211	+4.592	.01
G	+0.746	+2.055	.05	G	-0.337	-1.504	NS
H	+0.889	+2.681	.05	H	+1.209	+3.896	.01
I	+0.380	+2.000	NS	I	-0.154	-0.755	NS
L	-1.034	-3.133	.01	L	-0.834	-2.978	.01
M	+0.300	+1.071	NS	M	+0.943	+3.038	.01
N	+0.060	+0.171	NS	N	-0.543	-1.489	NS
O	-1.797	-4.382	.01	O	-1.966	-6.540	.01
Q_1	-0.174	-0.669	NS	Q_1	+0.457	+1.344	NS
Q_2	-0.360	-1.241	NS	Q_2	-0.343	-1.232	NS
Q_3	+0.177	+0.515	NS	Q_3	+1.326	+4.732	.01
Q_4	-0.863	-2.529	.05	Q_4	-1.806	-6.685	.01
Anxiety	-1.369	-3.908	.01	Anxiety	-2.094	-8.042	.01

df = 34
* $p < .05 = 2.030$
** $p < .01 = 2.724$
Note: Positive sign indicates increase in post-test mean; negative sign indicates decrease in post-test mean.

the session. At the .01 level of significance they have more ego strength or are emotionally more stable (C), are more trusting (L), are more placid, self-assured, or confident (O), and less anxious (Anxiety) after the session than before it.

The control group also shows significant changes on the 16 PF. At the .01 level, they are more intelligent (B), have more ego strength (C), are more happy-go-lucky (F), are more venturesome (H), are more trusting (L), are more imaginative (M), are more placid (O), more casual (Q_3), less tense (Q_4), and less anxious (Anxiety) than they were on initial testing.

Although the changes in the participants of the group session are positive, they are confounded by the changes in the control group. The control group shows the same direction of change in ego strength and anxiety (C, O, Q_4, and Anxiety). The only changes shown by the experimental group which are not shared by the control group are in factors E (more assertive) and G (more conscientious). On the other hand, the control group shows changes in intelligence (B), being happy-go-lucky (F), imaginativeness (M) and being more controlled (Q_3) not shared by the participants of a session. If our hypothesis that the control group was affected by a specifically anxious testing situation on their initial testing were true, not only would that help explain the reduction in anxiety related factors on second testing, but the increase of intelligence and imaginativeness which is otherwise difficult to account for and to some extent the increase in enthusiasm or being happy-go-lucky (F) might be accounted for. In any case, the positive changes noted in those participating in the session as reflected on the 16 PF are confounded by equally marked changes in the controls who did not participate.

On the MMPI, the changes are more discriminative between control and experimental groups as is seen in Table 9. Here the participants in the group session changed on scales D and Mf at the .05 level of significance and on scales L, F, K, Pt, Sc, Si, A, and Es at the .01 level. In contrast, the control group changed at the .01 level only on the A scale, and at the .05 level on K, D, Mf, Pt, Sc, and Es. Both groups did show significant changes on K, D, Mf, Pt, Sc, and A, but participants on the group session changed with a higher degree of significance. There are no scales on which the control group changed significantly that the experimental group did not, whereas the participants of a session also changed on scales L, F, and Si. The level of significance is higher in the group that participated in a session (.01 level) for scales K, Pt, Sc, and Es where the control group also showed significant change at the .05 level.

On one scale, Mf, both groups changed significantly, but whereas the control group decreased, the experimental group increased.

It should also be noted that on those scales where the degree of change did not reach the level of significance, the direction of the tendency to change as indicated by the difference in means is in a direction indicative of health. In the experimental group scales Hs, Hy, Pd, and Pa did decrease, though not to a level of significance. So when these results are also included, there is certainly no evidence that the sessions were detrimental. And when it is considered that no means were taken to separate among those who participated between those who were successes and those who were not, the results are even more positive.

TABLE 9

MMPI: t-TEST ON DIRECT DIFFERENCES OF INDIVIDUAL SCORES

Experimental Group				Control Group			
Scale	Difference in Means	t-test	Probability	Scale	Difference in Means	t-test	Probability
L	+3.200	+3.047	.01**	L	+0.400	+0.769	NS
F	-2.972	-3.338	.01	F	-1.200	-1.153	NS
K	+4.057	+3.380	.01	K	+2.829	+2.693	.05*
Hs	-2.171	-1.486	NS	Hs	-1.515	-1.316	NS
D	-5.114	-2.335	.05*	D	-4.657	-2.427	.05
Hy	-0.296	-0.327	NS	Hy	+1.400	+1.272	NS
Pd	-0.657	-0.359	NS	Pd	-3.057	-1.670	NS
Mf	+2.771	+2.388	.05	Mf	-3.229	-2.541	.05
Pa	-0.629	-0.550	NS	Pa	+0.714	+0.510	NS
Pt	-6.771	-4.003	.01	Pt	-3.428	-2.364	.05
Sc	-6.429	-3.992	.01	Sc	-3.742	-2.598	.05
Ma	+0.600	+0.408	NS	Ma	-1.342	-1.065	NS
Si	-6.115	-3.962	.01	Si	-1.514	-1.261	NS
A	-6.086	-3.677	.01	A	-4.000	-2.777	.01
Es	+4.142	+2.896	.01	Es	+3.257	+2.363	.05

df = 34
* $p < .05 = 2.030$
** $p < .01 = 2.724$
Note: Positive sign indicates increase in post-test mean; negative sign indicates decrease in post-test mean.

Since the rating scale of Story Sequence Analysis scoring system has no equal intervals, it cannot be treated with parametric statistics. The intensity of the scored import is indicated by -2,-1, or +1 and +2 (Arnold, 1962). These levels of positive or negative motivation cannot be considered a metric scale, since when a rater changes from positive to negative scoring, it is not a step equal to changing from 1 to 2 on the same side of the scale. This intrinsic inequality of steps in the rating scale limits the type of statistics that can be used, and so non-parametric methods that depend on rank ordering are used.

The results of the two non-parametric tests applied to the Motivation Index data are given in Table 10. The Wilcoxon Matched-Pair Signed Ranks Test is applied to comparisons between pre- and post-testing of each group because the scores of subjects can be matched as was done with the parametric t-test on direct differences above. When comparing the two groups, where matching is not possible, the Mann-Whitney U Test is employed.

When the two groups are compared on the initial testing there is no significant difference between the groups. When they are compared on second testing, the Motivation Index is significantly different. Whereas the two groups were not initially different in the level of positive motivation, after the experimental group had participated in a session, their level of motivation is significantly higher than the controls as is shown by the Mann-Whitney U Test.

The participants in the DC group session showed a significant increase in their level of positive motivation after the session at the .01 level of significance by a Wilcoxon Signed-Ranks Test. The control group did not change significantly between the two testings. The Motivation Index appears

TABLE 10

TAT: NON-PARAMETRIC TESTS ON MOTIVATION INDEX

A. Wilcoxon Matched-Pair Signed Ranks Test

	z-score	Probability
Experimental Group Pre-post Comparison	4.777	.01*
Control Group Pre-post Comparison	0.812	NS

B. Mann-Whitney U Test

	z-score	Probability
Pre-test Experimental and Control Comparison	0.153	NS
Post-test Experimental and Control Comparison	4.454	.01*

* $p < .01$ $z = 2.58$
$p < .05$ $z = 1.96$

to reflect a change of motivation in those who participate on the group session and is not changed over time in those who did not participate.

With regard to the hypotheses that were made related to anxiety, ego strength, and level of positive motivation, the following results were obtained:

(1) Participants in a DC therapy session show a significant decrease in anxiety. On the 16 PF they show a significant decrease at the .01 level on the second-order Anxiety factor. Of the scales correlated to anxiety on the 16 PF, they show a significant decrease at the .01 level on factors O and L and an increase on factor C. At the .05 level of significance there is a decrease in factors H and Q_4.

The control group, however, also shows significant decrease in the 16 PF second order Anxiety factor at the .01 level. On the scales correlated to anxiety, the control group shows a significant decrease at the .01 level on factors H, L, O, Q_3, and Q_4, with a significant increase at the .01 level on factor C. And so, although the 16 PF reflects a decrease in anxiety among those who participated on a DC group session, it shows as marked a decrease in the control group who did not participate.

On the MMPI, participants in the DC session likewise show a significant decrease in anxiety at the .01 level on scale A. On scales reported as related to positive therapeutic change, the participants of a DC group session show a significant increase at the .01 level on K, and a significant decrease at the .01 level on Pt, Sc, and Si, and at the .05 level on D.

The control group showed a significant decrease in anxiety also on the MMPI A scale at the .01 level. On scales reported as related to positive

therapeutic change, the control group showed no change at the .01 level of significance; but at the .05 level scale K increased, while scales D, Pt, and Sc decreased.

(2) Participants in a DC group session show a significant increase in ego strength. On the 16 PF, participants in a session show increased emotional stability or ego strength as measured by factor C at the .01 level of significance. The control group shows a similar significant increase at the .01 level on factor C. On the MMPI, participants in a DC session show a significant increase on Barron's ego strength scale (Es) at the .01 level; the control group showed a significant increase but at the .05 level.

(3) Participants in a DC group session show a significant increase in positive motivation as indicated by the Motivation Index at the .01 level. The control group did not significantly change their Motivation Index over an equivalent period of time. And whereas the two groups were not significantly different in the level of motivation on initial testing, those who participated in a DC session showed a significantly higher Motivation Index at the .01 level than their controls on second testing.

CHAPTER V

DISCUSSION

Of the three measures used to evaluate therapy in this study, Story Sequence Analysis of the TAT is the only measure that clearly differentiates between those who participated on a DC session and those who did not. Since similar changes are found in the control group with the measures related to anxiety and ego strength, we can conclude that the hypotheses regarding anxiety and ego strength are only partially supported. Whereas there was a decrease in anxiety and an increase in ego strength in those who participated on the session, the control group showed similar changes. It is true that the levels of significance for the changes in measures related to anxiety and ego strength on the MMPI are greater for the participants than for the control group. The MMPI could be said to differentiate between the two groups to some extent because of this difference in levels of significance. Although neither the 16 PF nor the MMPI clearly differentiate between the two groups, they do reflect a change in the direction of health for those who participated. It is worth noting that the participants in a DC session did not increase in anxiety nor decrease in ego strength. There is no indication that the effect of therapy was detrimental.

In accounting for the change in the control group reflected on the 16 PF and the MMPI there are some suggestions. If the 16 PF were the only measure used to evaluate the therapy, one would be inclined to conclude that

the therapeutic intervention, while not being detrimental, was not as therapeutic as the mere passage of time. If the results of the MMPI were taken alone as the measure of therapeutic change, one would be inclined to suggest a contamination effect on the control group since the level of significance for the change in the control group is not as high as it is for the participants. Taking the results of both the MMPI and the 16 PF, it could be suggested that both groups underwent a similar therapeutic intervention, either through contamination or because of an artifact such as a specific anxiety-producing situation at initial testing. It could also be suggested that these instruments do not validly reflect the changes that do occur following a DC session that differentiate the participants from the control group.

Since these suggested explanations of the change in the control group cannot be directly determined from the present data, we must conclude that the MMPI and the 16 PF do not clearly differentiate between changes in ego strength and anxiety occurring in participants of a DC session and a homogeneous control group who did not participate on such a session.

However, the TAT did show a clear increase in positive motivation in participants of a session that did not occur in the control group. This test did differentiate between the groups. The fact that SSA of the TAT did differentiate between the groups whereas the 16 PF and MMPI did not suggests that it is a more valid instrument to measure the type of changes that occur as a result of DC therapy with this normal range population than either the 16 PF or the MMPI.

Returning to the criteria of Meltzoff and Kornreich (1970) for an adequate study of the evaluation of psychotherapy, we can now consider how well the present study meets them.

(1) Freedom from major flaws that invalidate the conclusions. An effort has been made not to conclude too much from the data. There is no attempt to compare the effectiveness of DC therapy with other therapies, only to determine what changes result from it and whether these changes are beneficial or detrimental and whether they are better than no therapy. Since the same therapist is involved in each group session, it cannot be demonstrated in this study whether the method of therapy is idiosyncratic to one therapist. However, in each session there were one or two co-therapists as well, so there is some indication that it is not idiosyncratic. By combining three separate groups into the experimental group, the possibility of over-generalizing from one startling success is reduced.

(2) Use of an appropriate control group and adequate sampling. The control group is appropriate in terms of matching for age, sex, education, marriage status, and psychological health. This selection of matched groups contains the limitation of generalizing the results. Whether the results hold true for other groups, e.g. for females, for married males, for married couples, for a more pathological group, will need further studies with their own controls. The possibility of an initial anxiety-producing test situation for the control group has been suggested. This group was tested initially at the beginning of the school year and it is possible that this was at a time when test-taking was anxiety-producing. The possibility

of contamination of the control group has been mentioned. However, from the results of the data, this "contamination" would be of a positive therapeutic nature, making the differentiation between groups even more difficult.

(3) Relative freedom from bias. Two of the measures (16 PF and MMPI) are objective and so the possibility of investigator bias is unlikely to enter. All scales of these two inventories were included in the results to prevent an experimenter bias of including only those scales which show desired results and discarding others. By including the results of all scales, the possibility of statistical deviations as a result of chance alone is increased. For that reason, hypotheses were limited to scales related to specifically anxiety and ego strength which could be expected to change as a result of therapy.

The TAT protocols were independently scored blindly by two persons trained in SSA and the differences in scoring were conferenced to determine the final score. This procedure prevents subjective factors from entering in the scoring of the TAT.

Sampling bias was taken into account. The control group and the experimental group were set at 35. A few subjects were lost because they failed to take the follow-up tests. Some selection is inevitable in those participating on the group session since such participation is voluntary and a few persons were advised not to participate after pre-testing and clinical interview. The control group subjects did not face the decision of participating in such a session. However, once the control group and the experimental group data was collected, the data to be statistically analyzed

was rounded to 35 subjects in each group by random procedure.

(4) Employment of reasonably objective, reliable, and valid criteria measures. The rationale of the choice of measures was given in the review of literature and the method. In the interpretation of results some indication was given that two of the measures, the 16 PF and the MMPI, were not as valid to measure the results of DC therapy with this normal range population group as was the TAT.

(5) Presentation and suitably analyzed and interpreted data. The chapters on results and discussion have tried to do this.

In terms of judging the adequacy of this study, we must point out three possible flaws: the possible "contamination" of the controls by the participants in the session which appears to be of a therapeutic nature; the possibility of a specific anxiety-producing pre-test situation for the control group; and the questionable validity of the 16 PF and the MMPI as measures for therapeutic change in this normal range population. However, the TAT did clearly differentiate between the groups and did not show the effect of contamination or change in the specific pre-test situation. It reflects a change in positive motivation occurring in those who participated in a DC session which is not present in the control group.

CHAPTER VI

SUMMARY

Disclosure-confrontation is a form of group therapy introduced by Donald J. Tyrell and used in his clinical practice. Its goal is to increase the characteristics of truth, freedom, and care in the way participants relate to others in the group and to significant persons in their lives and it operates on the conviction that honest disclosure of one person to another leads to the development of such mature relations. The open-ended group session is considered a microcosm of life where a person commits himself to be as open and honest with the group as he can and to remain with the group until it has gone as far as possible to resolve the problems of each person in the group. When disclosure is not spontaneous or complete the person is confronted at whatever level of personality it is relevant so that barriers to disclosure are faced, whether these be emotional trauma or value conflicts. Efforts are made to provide a corrective emotional experience by re-enacting either in reality or through imagination situations where the expression of fear, anger, or affection have been impeded or inappropriately expressed in the past. This corrective experience is necessarily emotional when the original barrier to mature relationships was emotional in character; it is moral when values are in question and intellectual when understanding is lacking.

The 16 PF, MMPI, and TAT were administered to 35 unmarried male college students who participated in a DC therapy session and to a control

group of students from the same college matched for age, sex, marriage status, educational level, and psychological health. The tests were administered once before the students participated on a DC therapy session and again after the session. Members of three different group sessions were combined to form the experimental group. The control group was re-tested after an equivalent period of time without an intervening therapy session.

The 16 PF and MMPI were computer scored and the data analyzed in stens and T-scores respectively. The TAT protocols, using 13 stories written by the subject at each testing, were scored using Arnold's method of Story Sequence Analysis independently by this investigator and blindly by Dr. Arnold. Differences between scoring were conferenced with Dr. Arnold and a final score determined. The Motivation Index for each protocol was computed and used in the statistical analysis.

It was hypothesized that (1) participants in a DC group session would show a decrease in anxiety while the control group would show no change in anxiety over an equivalent period of time; (2) participants in a DC session would show an increase in ego strength while the control group would show no change in ego strength; and (3) participants in a DC session would show an increase in positive motivation while the motivation level of the control group would not change.

(1) Those who participated in the DC group session did significantly decrease in anxiety at the .01 level on both the 16 PF and the MMPI measures. But the control group also showed a decrease in anxiety at the .01 level. The 16 PF reflected marked changes in both experimental and control groups on factors correlated to anxiety. The MMPI showed changes on clinical scales

reported to be related to positive therapeutic change in both experimental and control groups, but the changes in participants in a DC session were at the .01 level of significance whereas the level of significance for the control group was .05.

(2) Participants in a DC group session showed an increase in ego strength at the .01 level of significance on both the 16 PF factor C and the MMPI Es scale. The control group also showed a significant increase in ego strength, at the .01 level on the 16 PF factor C and at the .05 level on the MMPI Es scale.

(3) Participants in a DC session showed a significant increase in positive motivation as indicated by the increase in Motivation Index at the .01 level, whereas the control group did not change. On initial testing the two groups were not significantly different in their level of motivation; but after participating in the DC session, the experimental group had a significantly higher level of motivation at the .01 level than the control group.

The three measures used to evaluate DC therapy each show positive change after participation in a session in terms of a decrease in anxiety, an increase in ego strength, and an increase in positive motivation. However, the decrease in anxiety and the increase in ego strength of the experimental group are confounded by similar changes in the control group as reflected on 16 PF factors and MMPI scales.

The Motivation Index clearly differentiates between the two groups, showing significant increase in the level of motivation in the participants

of a session and no significant changes in those who did not participate. This supports the reliability and validity of SSA to evaluate the outcome of therapy.

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APPENDIX I

16 PF DATA

Control Group: Pre-test

Subject	A	B	C	E	F	G	H	I	L
99	6.3	10.0	1.5	2.7	5.4	7.3	3.8	8.0	9.4
101	8.1	8.0	3.9	6.3	5.8	4.5	4.7	5.4	7.5
102	4.6	7.0	3.9	5.2	5.4	4.5	4.4	7.5	8.8
103	3.3	9.0	3.4	4.7	4.5	2.5	3.4	7.5	6.3
109	1.0	7.0	1.8	2.2	1.6	3.8	1.0	6.9	5.5
125	3.2	7.0	3.3	6.6	4.8	8.3	3.5	4.8	6.7
127	5.4	7.0	6.9	5.1	6.2	6.1	6.3	3.8	3.7
128	2.0	7.0	1.0	2.2	5.7	3.3	1.8	6.4	7.3
129	7.7	5.9	6.9	4.1	6.2	2.7	4.9	10.0	4.3
130	5.4	2.8	6.4	5.6	4.4	2.7	4.2	6.4	1.0
131	7.7	9.1	2.3	6.6	6.2	4.4	5.3	5.3	4.9
133	7.7	1.7	4.9	8.0	1.0	2.2	3.9	8.0	6.7
134	9.4	5.9	1.8	7.5	7.1	6.1	8.4	8.0	6.7
135	10.0	4.9	6.4	5.6	8.9	4.4	7.4	8.5	6.1
141	6.0	7.0	3.3	6.6	7.1	6.1	3.9	8.5	10.0
136	6.0	5.9	5.4	7.5	4.8	4.9	5.3	7.4	9.1
139	9.4	7.0	8.0	5.1	6.2	3.8	5.3	8.0	3.1
142	6.0	4.9	8.0	8.5	6.6	4.4	6.3	6.9	10.0
143	4.9	2.8	5.9	4.6	6.6	6.1	6.7	8.5	5.5
145	2.0	10.0	5.9	5.1	2.1	2.2	3.9	10.0	4.9
148	6.6	4.9	4.9	8.0	6.6	4.4	4.6	10.0	4.9
150	7.2	3.8	6.4	5.1	5.7	7.2	4.9	4.8	5.5
152	9.4	3.8	5.9	4.6	5.7	3.8	9.1	9.0	4.9
153	6.2	5.0	7.4	8.0	6.7	5.6	7.3	5.1	4.5
154	5.4	3.8	5.4	5.1	6.2	5.5	2.8	8.5	6.7

(Continued on the next page.)

16 PF DATA

Control Group: Pre-test

Subject	A	B	C	E	F	G	H	I	L
155	6.6	9.1	4.9	6.1	5.3	6.6	4.6	9.0	8.5
156	6.6	4.9	3.3	7.5	7.1	3.3	6.0	10.0	7.3
158	2.6	4.9	4.9	8.5	6.6	2.2	6.0	8.5	6.7
162	7.7	3.8	5.9	5.6	3.5	3.8	2.1	6.4	2.5
164	7.2	7.0	4.4	5.6	8.9	6.1	4.6	6.9	7.3
166	10.0	1.7	6.4	3.6	4.8	6.6	8.1	7.4	3.7
167	6.0	5.9	6.4	7.5	4.4	4.4	8.1	6.4	4.3
168	4.9	4.9	5.9	3.6	6.2	4.9	4.9	10.0	6.1
169	3.2	7.0	5.9	5.1	4.8	2.7	2.5	4.8	3.7
170	7.2	8.0	8.5	3.6	4.8	7.7	6.0	8.0	4.3

Factor	Sum of scores	Mean	Factor	Sum of scores	Mean
A	212.9	6.083	G	165.1	4.717
B	208.4	5.954	H	176.0	5.029
C	177.4	5.069	I	260.6	7.446
E	197.3	5.637	L	208.4	5.954
F	193.9	5.540			

16 PF DATA

Control Group: Pre-test

Subject	M	N	O	Q_1	Q_2	Q_3	Q_4	Anxiety
99	3.7	1.0	8.5	2.1	4.9	8.5	10.0	9.3
101	4.3	4.9	8.0	3.7	7.1	3.4	9.5	9.0
102	5.6	1.0	9.5	1.5	5.4	5.9	8.6	8.9
103	6.1	4.9	10.0	3.7	4.9	2.8	8.2	9.3
109	5.8	10.0	10.0	4.2	8.2	2.7	8.5	9.4
125	8.1	5.9	6.4	5.4	9.3	3.3	9.3	8.0
127	5.3	5.2	6.9	2.9	5.0	3.9	6.4	5.9
128	1.0	4.5	6.9	3.6	7.1	2.7	8.9	9.4
129	9.2	5.2	4.3	4.2	3.9	2.7	6.4	5.4
130	7.5	8.8	3.3	3.6	2.3	6.3	3.9	3.5
131	5.8	4.5	10.0	4.8	3.9	4.5	7.7	8.4
133	6.9	4.5	5.9	4.8	6.6	1.0	5.6	6.5
134	4.7	3.8	9.4	3.6	2.3	2.0	10.0	10.0
135	8.6	8.8	4.8	4.2	5.5	3.3	4.3	4.8
136	5.3	3.8	4.8	4.8	3.9	3.9	8.1	7.0
139	6.9	6.6	5.3	1.0	1.7	5.1	7.3	5.6
141	2.5	3.8	6.9	4.8	5.5	4.5	10.0	9.3
142	5.8	5.2	4.3	4.8	6.0	6.3	6.8	5.4
143	8.6	3.8	6.9	2.3	3.9	3.3	6.0	6.3
145	8.6	7.4	5.3	4.8	6.6	2.7	4.3	4.9
148	10.0	6.6	7.4	6.1	8.7	1.0	6.0	6.6
150	4.7	3.8	3.3	6.1	3.3	5.1	3.9	4.4
152	5.8	6.6	5.3	1.0	2.3	6.3	3.5	4.6
153	6.9	7.0	4.5	7.2	6.6	4.1	3.8	4.0
154	8.6	5.2	8.9	6.1	4.4	2.0	6.8	7.8

(Continued on the next page.)

16 PF DATA

Control Group: Pre-test

Subject	M	N	O	Q_1	Q_2	Q_3	Q_4	Anxiety
155	3.1	5.2	5.3	8.6	6.6	5.7	2.7	5.1
156	10.0	5.2	8.4	6.7	8.2	1.0	8.9	8.4
158	5.8	5.2	10.0	5.4	6.0	3.9	8.9	8.2
162	5.8	7.4	4.3	4.8	6.6	5.1	4.3	4.6
164	7.5	6.6	6.4	3.6	4.4	3.3	7.7	7.5
166	4.2	3.8	2.8	5.4	5.0	7.5	3.1	3.4
167	4.7	4.5	3.8	7.9	5.0	5.1	5.2	4.2
168	5.3	6.6	8.4	5.4	5.5	4.5	5.2	6.6
169	7.5	5.2	5.9	4.8	7.1	6.9	4.7	4.7
170	6.4	5.9	3.8	5.4	4.4	8.7	3.1	3.1

Factor	Sum of scores	Mean	Factor	Sum of scores	Mean
M	216.6	6.189	Q_2	188.1	5.374
N	188.4	5.383	Q_3	149.0	4.257
O	225.9	6.454	Q_4	227.6	6.503
Q_1	159.3	4.551	Anxiety	229.5	6.557

16 PF DATA

Control Group: Post-test

Subject	A	B	C	E	F	G	H	I	L
99	7.0	5.6	3.9	3.5	6.4	8.8	3.0	8.1	5.9
101	6.4	6.4	6.5	7.2	4.0	3.5	5.0	6.2	3.5
102	4.4	6.4	5.5	7.2	3.5	5.8	3.0	6.8	7.1
103	5.1	10.0	4.9	5.6	5.5	3.5	5.0	7.4	2.9
109	5.6	9.0	2.6	4.6	3.6	3.5	3.0	7.2	3.9
125	3.2	8.2	1.0	8.3	5.0	8.2	2.2	2.5	8.3
127	5.1	8.0	10.0	7.5	6.7	5.0	10.0	5.1	4.5
128	3.9	8.0	1.0	3.0	4.7	4.5	1.0	10.0	8.3
129	6.7	8.0	7.9	4.6	6.7	2.5	6.9	8.4	4.5
130	4.4	4.7	9.5	6.2	7.4	2.3	4.2	6.8	1.7
131	3.8	10.0	3.9	7.2	5.9	5.8	5.9	4.3	4.7
133	7.0	5.6	6.5	5.6	6.4	1.7	5.4	7.4	5.3
134	8.3	6.4	1.9	8.8	9.3	4.1	9.7	8.1	10.0
135	10.0	8.0	7.9	6.0	10.0	1.0	8.2	7.8	6.4
136	6.4	9.0	6.0	8.8	10.0	3.5	8.3	10.0	4.7
139	9.3	9.0	6.2	6.0	7.2	5.6	8.6	10.0	2.6
141	7.0	6.4	4.4	6.2	8.8	7.0	3.8	6.2	8.2
142	5.1	9.0	8.5	8.8	7.9	5.2	8.3	6.8	7.7
143	6.4	7.3	7.0	5.1	9.3	1.0	6.7	6.2	4.7
145	1.9	10.0	6.0	3.5	3.5	2.9	3.8	10.0	4.7
148	6.4	9.0	6.5	9.3	7.9	5.2	10.0	9.3	3.5
150	6.4	5.6	10.0	4.1	7.4	5.2	9.1	3.7	4.7
152	10.0	7.3	7.0	6.7	6.9	4.6	8.7	10.0	5.9
153	5.7	5.6	9.5	6.2	6.9	3.5	10.0	3.7	4.7
154	7.7	5.6	9.0	2.5	6.9	4.6	6.7	8.1	7.7

(Continued on the next page.)

16 PF DATA

Control Group: Post-test

Subject	A	B	C	E	F	G	H	I	L
155	7.7	10.0	10.0	6.2	5.0	5.8	3.4	8.7	8.3
156	7.2	8.0	1.0	9.1	7.7	1.7	5.1	9.1	7.0
158	1.0	5.6	3.9	4.6	10.0	1.0	7.1	8.7	5.9
162	8.3	6.4	8.5	6.2	5.0	2.9	7.1	6.8	2.3
164	7.2	8.0	6.8	7.0	10.0	2.5	7.3	7.2	5.8
166	10.0	5.6	8.0	5.1	6.4	8.8	7.9	7.4	4.1
167	5.6	9.0	6.2	6.5	5.2	4.0	7.7	6.7	1.0
168	3.8	6.4	8.0	5.6	5.9	5.8	7.1	8.7	2.9
169	1.0	7.3	10.0	1.9	6.4	4.1	2.2	5.0	1.7
170	7.0	8.2	9.5	4.6	6.9	8.2	7.9	6.8	4.1

Factor	Sum of scores	Mean	Factor	Sum of scores	Mean
A	212.0	6.057	G	153.3	4.380
B	262.6	7.503	H	218.3	6.237
C	225.0	6.429	I	255.2	7.291
E	209.3	5.980	L	179.2	5.120
F	236.3	6.751			

16 PF DATA

Control Group: Post-test

Subject	M	N	O	Q_1	Q_2	Q_3	Q_4	Anxiety
99	3.7	4.4	4.4	2.4	7.7	6.7	6.9	6.8
101	8.9	5.8	4.4	3.1	5.9	8.5	2.6	3.1
102	6.6	3.7	5.4	3.7	4.7	6.1	7.9	6.7
103	4.9	7.3	5.4	3.7	4.7	3.7	4.5	5.2
109	7.3	5.6	6.5	5.2	5.6	8.1	6.3	6.2
125	5.4	5.8	7.9	4.4	7.7	5.5	10.0	9.4
127	4.6	1.0	3.3	5.8	5.0	6.8	3.8	2.2
128	5.2	3.2	6.5	1.0	5.0	3.5	7.8	9.2
129	10.0	5.6	3.3	5.2	3.9	5.4	3.8	3.4
130	7.7	8.0	2.0	4.4	5.3	5.5	1.0	1.0
131	7.7	3.7	7.4	5.8	5.3	3.7	6.9	6.6
133	6.6	6.6	3.5	4.4	4.7	3.7	2.6	3.7
134	4.3	5.1	7.9	5.1	1.0	3.1	10.0	9.5
135	9.0	3.2	5.5	3.0	3.3	3.5	4.7	4.9
136	6.6	5.1	2.5	5.1	4.7	5.5	4.5	3.7
139	5.2	3.2	5.0	5.8	4.5	8.7	2.6	2.4
141	3.7	1.0	6.9	7.8	3.5	6.7	8.4	7.9
142	6.0	2.3	2.5	6.4	6.5	7.3	5.5	3.5
143	8.3	3.0	5.4	5.1	2.9	4.9	5.0	4.5
145	8.9	8.0	5.4	7.1	7.1	2.4	5.0	5.2
148	10.0	5.1	2.0	4.4	6.5	4.9	2.6	2.2
150	8.3	4.4	3.0	1.0	4.1	6.1	1.0	1.5
152	6.6	5.1	3.9	5.1	1.0	6.1	2.6	3.6
153	7.1	5.1	4.9	7.1	4.7	5.5	3.1	2.6
154	9.4	7.3	5.9	5.1	5.3	4.3	4.5	4.7

(Continued on the next page.)

16 PF DATA

Control Group: Post-test

Subject	M	N	O	Q_1	Q_2	Q_3	Q_4	Anxiety
155	10.0	2.3	3.9	7.8	6.5	4.3	1.0	2.6
156	10.0	4.8	9.1	8.0	6.6	2.9	8.7	9.5
158	6.6	6.6	8.9	5.8	3.5	3.1	9.3	8.2
162	7.7	7.3	2.0	3.1	2.9	6.1	3.6	2.4
164	8.0	3.2	1.0	7.2	5.6	3.5	5.1	3.9
166	6.6	5.1	1.5	4.4	5.3	10.0	2.2	2.0
167	9.0	4.0	1.0	6.5	5.0	7.4	3.0	1.5
168	5.4	5.8	3.9	5.1	5.9	6.1	4.5	3.6
169	7.7	7.3	2.5	5.8	9.5	7.9	1.7	1.0
170	6.6	4.4	2.5	4.4	4.7	7.9	1.7	1.8

Factor	Sum of scores	Mean	Factor	Sum of scores	Mean
M	249.6	7.131	Q_2	176.1	5.031
N	169.4	4.840	Q_3	195.4	5.583
O	157.1	4.489	Q_4	164.4	4.697
Q_1	175.3	5.009	Anxiety	156.2	4.463

APPENDIX II

16 PF DATA

Experimental Group: Pre-test

Subject	A	B	C	E	F	G	H	I	L
84	6.9	10.0	3.4	3.2	6.8	3.5	6.5	10.0	5.1
85	3.9	7.0	2.9	7.2	8.3	5.6	3.4	7.5	6.9
86	7.4	10.0	4.9	5.7	4.9	6.6	3.0	6.5	6.9
87	4.6	8.0	4.9	4.7	5.8	5.0	2.2	6.5	7.5
88	3.9	10.0	4.4	8.2	10.0	1.9	10.0	4.3	5.1
89	5.7	10.0	6.0	2.7	2.2	6.1	2.6	6.5	3.9
90	5.7	10.0	5.4	8.8	10.0	1.5	10.0	10.0	6.9
91	3.3	10.0	6.6	3.2	7.8	2.5	1.8	6.5	6.9
92	5.7	8.0	4.4	1.0	4.9	3.0	3.0	7.5	3.3
93	6.3	7.0	3.9	4.2	10.0	6.6	5.1	8.0	9.4
105	5.4	5.9	6.9	2.7	4.8	3.8	3.2	6.4	4.3
106	8.3	3.8	4.9	8.0	5.7	2.7	5.6	10.0	6.7
108	6.6	5.9	10.0	8.0	5.3	4.9	9.1	3.8	4.3
111	8.3	7.0	1.8	6.6	8.0	4.9	8.4	8.5	10.0
112	9.4	1.0	1.0	5.6	5.3	7.2	4.2	5.9	6.7
115	4.9	4.9	5.4	1.0	1.6	7.7	2.8	8.5	2.5
116	6.0	7.0	5.9	6.6	8.5	2.2	7.7	10.0	3.7
117	2.0	4.9	2.3	3.2	3.0	2.2	1.0	4.3	2.5
118	8.3	4.9	4.4	6.6	3.9	4.4	5.6	8.5	6.7
120	7.7	4.9	2.8	4.6	5.3	4.4	2.8	6.9	6.7
121	6.0	7.0	6.9	3.6	4.8	4.9	5.6	9.0	3.1
122	3.7	7.0	4.9	4.6	4.8	3.8	2.8	6.4	4.9
123	4.3	7.0	5.9	7.5	2.5	5.5	3.9	8.0	3.7
125	3.2	8.2	1.0	8.3	5.0	8.2	2.2	2.5	8.3
127	5.1	8.0	10.0	7.5	6.7	5.0	10.0	5.1	4.5

(Continued on the next page.)

16 PF DATA

Experimental Group: Pre-test

Subject	A	B	C	E	F	G	H	I	L
128	3.9	8.0	1.0	3.0	4.7	4.5	1.0	10.0	8.3
129	6.7	8.0	7.9	4.6	6.7	2.5	6.9	8.4	4.5
130	4.4	4.7	9.5	6.2	7.4	2.3	4.2	6.8	1.7
131	3.8	10.0	3.9	7.2	5.9	5.8	5.9	4.3	4.7
133	7.0	5.6	6.5	5.6	6.4	1.7	5.4	7.4	5.3
134	8.3	6.4	1.9	8.8	9.3	4.1	8.7	8.1	10.0
135	10.0	8.0	7.9	6.0	10.0	1.0	8.2	7.8	6.4
138	1.9	5.6	2.9	7.2	2.6	2.9	1.8	8.7	6.5
140	5.1	6.4	7.5	7.8	8.8	1.0	4.2	10.0	7.7
141	7.0	6.4	4.4	6.2	8.8	7.0	3.8	6.2	8.3

Factor	Sum of scores	Mean
A	200.7	5.734
B	246.5	7.043
C	174.3	4.980
E	195.9	5.597
F	216.5	6.186
G	146.9	4.197
H	172.6	4.931
I	254.8	7.280
L	203.9	5.826

16 PF DATA

Experimental Group: Pre-test

Subject	M	N	O	Q_1	Q_2	Q_3	Q_4	Anxiety
84	6.1	3.4	9.0	3.0	4.3	7.2	5.8	6.5
85	6.6	2.6	7.5	9.2	4.9	5.3	7.0	7.8
86	6.1	1.8	8.0	3.7	9.3	5.9	8.6	8.1
87	4.3	5.6	8.0	3.0	7.1	4.6	9.1	8.8
88	4.3	1.0	6.0	4.5	6.0	4.0	7.0	5.9
89	8.9	4.9	5.0	6.5	7.1	6.6	3.4	4.4
90	6.6	1.0	9.0	5.2	4.9	1.0	9.5	8.5
91	4.9	1.0	4.4	2.1	6.6	2.8	7.8	7.3
92	8.3	7.9	8.5	3.0	8.2	4.0	6.5	7.3
93	5.6	2.6	9.5	3.7	6.0	5.9	8.2	8.7
105	8.1	3.8	3.8	4.8	5.5	4.5	3.1	3.8
106	8.6	3.1	6.4	5.4	4.4	3.3	8.5	7.3
108	7.5	4.5	2.3	4.8	6.0	7.5	3.1	1.6
111	7.5	4.5	9.4	6.7	4.4	6.3	8.5	8.8
112	6.9	3.8	8.4	4.2	3.9	4.5	10.0	10.0
115	8.6	7.4	7.4	2.9	9.3	7.5	5.6	5.9
116	7.5	1.6	3.3	5.4	5.0	3.3	4.3	4.0
117	3.6	5.9	9.4	2.3	7.7	2.0	10.0	9.5
118	6.4	5.2	4.3	6.7	7.1	6.3	4.3	5.0
120	4.2	8.8	7.4	4.2	5.5	5.1	6.8	7.9
121	4.7	4.5	6.9	6.7	6.6	5.1	5.2	5.3
122	10.0	3.8	10.0	4.2	4.4	3.9	6.4	7.3
123	7.5	3.8	6.9	6.1	6.6	3.9	6.4	6.0
125	5.4	5.8	7.9	4.4	7.7	5.5	10.0	9.4
127	4.6	1.0	3.3	5.8	5.0	6.8	3.8	2.2

(Continued on the next page.)

16 PF DATA

Experimental Group: Pre-test

Subject	M	N	O	Q_1	Q_2	Q_3	Q_4	Anxiety
128	5.2	3.2	6.5	1.0	5.0	3.5	7.8	9.2
129	10.0	5.6	3.3	5.2	3.9	5.4	3.8	3.4
130	7.7	8.0	2.0	4.4	5.3	5.5	1.0	1.0
131	7.7	3.7	7.4	5.8	5.3	3.7	6.9	6.6
133	6.6	6.6	3.5	4.4	4.7	3.7	2.6	3.7
134	4.3	5.1	7.9	5.1	1.0	3.1	10.0	9.5
135	9.0	3.2	5.5	3.0	3.3	3.5	4.7	4.9
138	8.9	3.7	4.4	5.1	6.5	2.4	6.9	6.7
140	5.4	1.6	6.4	6.4	7.7	3.7	8.4	6.7
141	3.7	1.0	6.9	7.8	3.5	6.7	8.4	7.9

Factor	Sum of scores	Mean	Factor	Sum of scores	Mean
M	231.3	6.609	Q_2	199.7	5.706
N	141.0	4.029	Q_3	164.0	4.686
O	225.8	6.451	Q_4	229.4	6.554
Q_1	166.7	4.763	Anxiety	226.9	6.483

16 PF DATA

Experimental Group: Post-test

Subject	A	B	C	E	F	G	H	I	L
84	7.7	7.3	2.9	3.5	5.9	4.6	7.5	10.0	6.5
85	7.0	8.2	7.5	6.7	5.0	4.1	5.9	8.1	7.7
86	7.0	9.0	6.5	5.1	1.0	6.4	4.2	10.0	1.7
87	3.8	4.7	3.4	6.2	2.6	7.6	2.6	5.0	6.5
88	8.9	7.3	2.9	4.6	6.9	4.1	7.9	5.6	2.9
89	5.7	9.0	9.5	4.1	1.6	7.0	2.2	7.4	2.3
90	5.1	8.2	8.5	7.8	5.9	4.1	9.5	10.0	1.0
91	5.7	10.0	6.0	4.1	7.4	1.0	3.4	7.4	6.5
92	8.3	6.4	3.9	5.1	5.5	1.7	4.6	6.8	2.9
93	7.7	6.4	7.5	5.6	8.4	6.4	7.5	8.1	8.3
105	5.7	7.3	9.5	5.1	6.4	2.9	6.3	6.8	5.9
106	8.3	6.4	7.0	8.3	7.9	5.2	6.3	10.0	4.7
108	7.7	9.0	10.0	10.0	6.9	6.4	9.5	4.3	2.3
111	8.3	9.0	3.4	8.3	8.4	7.0	8.3	8.7	7.1
112	8.5	6.0	2.6	5.5	6.2	5.0	3.4	7.2	7.6
115	7.7	5.6	7.0	1.9	5.0	2.9	4.6	10.0	2.9
116	6.4	8.2	7.5	8.3	10.0	4.6	10.0	10.0	4.1
117	3.2	7.3	4.4	6.2	5.5	2.3	3.8	4.3	2.3
118	5.1	10.0	5.5	9.3	5.9	4.1	8.3	9.3	5.9
120	8.9	7.3	4.9	5.1	8.4	4.1	3.4	6.8	5.9
121	7.0	9.0	7.5	7.2	6.9	4.6	5.4	10.0	1.0
122	5.7	10.0	9.0	10.0	6.9	7.6	9.1	5.6	2.3
123	3.7	8.0	6.9	8.0	3.9	8.3	6.0	9.0	1.0
125	4.3	7.0	5.9	8.0	5.7	7.7	4.9	4.3	4.9
127	3.7	5.9	9.0	6.6	5.3	3.8	7.4	5.9	6.1

(Continued on the next page.)

16 PF DATA

Experimental Group: Post-test

Subject	A	B	C	E	F	G	H	I	L
128	2.6	4.9	5.4	6.1	7.1	7.7	2.1	6.9	6.7
129	6.0	8.0	6.9	6.1	5.7	4.4	8.1	8.5	6.1
130	4.3	8.0	8.5	4.6	5.7	4.4	4.2	6.4	4.3
131	3.2	7.0	5.4	3.6	4.8	3.3	2.8	5.3	5.5
133	3.7	4.9	4.9	6.1	1.6	2.2	4.2	6.9	4.9
134	8.3	5.9	2.3	7.5	6.6	6.1	8.8	9.0	6.7
135	8.3	9.1	6.4	3.2	6.6	7.7	5.3	8.5	3.7
138	3.7	4.9	3.3	7.5	3.0	3.3	6.0	9.0	3.7
140	3.2	3.8	5.4	7.1	7.5	2.7	4.2	8.5	6.7
141	6.6	2.8	3.9	8.5	7.1	7.7	6.0	8.5	9.1

Factor	Sum of scores	Mean	Factor	Sum of scores	Mean
A	211.0	6.029	G	173.0	4.943
B	251.8	7.194	H	203.7	5.820
C	211.1	6.031	I	268.1	7.660
E	220.9	6.311	L	167.7	4.791
F	205.2	5.863			

16 PF DATA

Experimental Group: Post-test

Subject	M	N	O	Q_1	Q_2	Q_3	Q_4	Anxiety
84	8.3	3.0	7.9	3.1	2.3	3.7	6.5	7.5
85	7.7	1.6	3.0	4.4	6.5	6.7	2.2	3.0
86	7.7	5.1	5.4	3.7	7.7	6.7	4.1	4.3
87	4.3	5.8	6.4	4.4	8.3	5.5	6.5	7.1
88	6.0	3.0	7.9	4.4	3.5	2.4	6.9	7.2
89	9.4	3.0	1.0	6.4	5.3	6.7	1.0	1.0
90	6.0	5.1	2.0	4.4	5.3	4.3	5.0	2.8
91	6.0	3.0	4.9	4.4	5.3	2.4	7.9	6.6
92	5.4	5.8	3.0	3.1	1.7	4.9	5.0	5.0
93	4.9	2.3	3.9	4.4	4.7	7.3	5.0	4.6
105	8.3	3.7	3.0	3.1	7.1	5.5	2.6	2.5
106	7.1	3.0	5.4	5.8	4.7	4.3	6.9	5.7
108	8.3	5.1	1.5	3.1	4.1	5.5	1.0	1.0
111	7.7	3.7	7.4	3.7	4.7	9.1	7.4	6.9
112	5.8	1.6	9.1	4.5	3.9	4.8	9.1	9.4
115	8.9	8.0	3.5	4.4	8.9	6.7	3.6	3.4
116	5.4	1.6	1.0	7.1	4.1	5.5	3.6	2.5
117	7.1	3.0	6.9	5.1	5.9	2.4	5.5	5.9
118	6.0	2.3	3.0	7.1	8.3	4.9	4.5	3.9
120	5.4	6.6	2.0	4.4	5.9	3.7	6.0	5.4
121	6.6	1.6	3.5	6.4	8.3	7.3	4.1	3.1
122	8.9	1.0	3.9	3.7	2.9	4.9	3.6	2.6
123	8.6	4.5	3.8	4.2	5.5	5.1	6.4	4.4
125	8.1	2.4	3.8	4.8	8.7	7.5	8.1	5.3
127	6.4	3.8	2.8	3.6	3.9	3.3	5.2	3.8

(Continued on the next page.)

16 PF DATA

Experimental Group: Post-test

Subject	M	N	O	Q_1	Q_2	Q_3	Q_4	Anxiety
128	6.4	3.8	5.3	3.6	4.4	4.5	8.9	7.5
129	10.0	4.5	2.3	4.8	5.0	1.0	6.4	4.6
130	5.8	8.8	3.8	4.2	4.4	5.7	2.2	3.0
131	6.4	6.6	8.9	5.4	6.6	4.5	9.3	8.0
133	7.5	5.2	5.9	3.6	6.0	1.0	6.0	6.2
134	2.5	5.2	7.9	5.4	2.8	3.9	9.3	8.9
135	9.2	5.2	5.3	3.6	3.9	6.3	6.0	5.3
138	6.4	4.5	5.9	4.2	5.5	2.0	6.4	6.5
140	4.7	3.8	5.9	4.8	5.0	5.7	8.1	6.9
141	8.6	5.9	4.3	6.7	6.0	4.5	8.9	7.2

Factor	Sum of scores	Mean	Factor	Sum of scores	Mean
M	241.8	6.908	Q_2	187.1	5.346
N	143.1	4.089	Q_3	170.2	4.863
O	161.5	4.614	Q_4	199.2	5.691
Q_1	160.6	4.589	Anxiety	179.0	5.114

APPENDIX III

MMPI DATA

Control Group: Pre-test

Subject	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si	A	Es
99	44	66	49	52	53	51	70	78	56	64	67	61	51	61	49
101	40	60	44	53	53	56	78	74	50	71	76	68	55	71	43
102	50	48	48	49	51	47	55	61	53	60	57	57	65	59	49
103	53	55	62	49	75	60	50	73	59	64	55	43	73	64	49
109	40	60	42	88	87	67	68	71	62	88	87	57	78	81	35
125	44	55	38	49	58	47	50	74	73	68	78	70	64	70	56
127	44	48	51	53	58	64	45	55	47	52	43	52	47	42	59
128	40	60	46	56	53	56	47	61	44	63	60	57	61	64	56
129	50	53	68	40	63	64	75	76	62	49	51	61	48	45	64
130	50	48	61	42	46	55	53	71	65	49	43	45	44	41	56
131	40	58	44	42	56	47	68	61	53	59	60	61	58	56	56
133	50	62	51	53	58	58	81	76	65	70	75	70	63	66	43
134	50	58	44	56	70	64	88	73	67	74	68	70	45	67	41
135	46	64	57	47	51	53	42	86	65	50	51	59	43	56	49
136	50	55	53	51	41	55	45	82	62	54	60	72	47	44	61
139	46	46	61	44	41	62	50	74	62	50	47	52	50	46	59
141	40	76	36	72	82	65	75	84	53	77	80	77	62	71	33
142	53	48	57	40	39	45	47	61	56	45	47	59	45	42	72
143	40	48	57	44	70	49	60	69	47	59	48	57	44	52	53
145	50	53	51	44	48	55	45	84	50	50	55	61	49	41	54
148	50	46	74	42	58	53	68	73	53	48	48	52	52	40	56
150	50	55	51	42	44	38	45	47	44	50	48	59	44	41	62
152	53	48	61	53	46	73	55	71	56	46	49	66	38	42	61
153	50	46	61	42	34	45	53	53	50	41	43	63	38	41	64
154	53	50	64	42	53	51	35	69	56	50	43	52	48	46	51

(Continued on the next page.)

MMPI DATA

Control Group: Pre-test

Subject	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si	A	Es
155	50	53	57	47	51	49	45	74	30	49	52	66	52	46	53
156	36	76	38	53	48	53	50	78	62	68	76	66	67	74	48
158	50	55	44	56	60	53	60	71	53	70	63	57	54	67	46
170	60	44	70	42	44	60	35	53	50	38	40	48	40	37	67
162	46	55	62	42	58	56	55	59	62	48	51	45	50	42	49
164	50	55	51	44	51	40	47	78	59	56	57	66	51	54	54
166	60	48	64	42	58	58	60	65	41	45	53	39	43	41	51
167	46	53	53	42	29	56	58	47	47	45	47	66	41	46	64
168	50	46	55	47	44	53	40	55	41	43	43	52	49	45	59
169	56	48	59	42	53	56	42	59	53	50	49	50	58	46	72

Scale	Sum of scores	Mean	Scale	Sum of scores	Mean
L	1680	48.000	Pa	1908	54.514
F	1899	54.257	Pt	1963	56.085
K	1884	53.828	Sc	1970	56.285
Hs	1701	48.600	Ma	2056	58.742
D	1884	53.828	Si	1817	51.914
Hy	1914	54.685	A	1847	52.771
Pd	1940	55.428	Es	18.94	54.114
Mf	2396	68.457			

MMPI DATA

Control Group: Post-test

Subject	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si	A	Es
99	50	53	51	47	41	40	60	73	47	60	56	66	51	56	56
101	56	50	62	47	39	58	60	63	67	46	52	54	45	38	58
102	50	53	48	44	36	47	45	65	50	56	55	70	63	52	54
103	46	50	66	49	60	64	42	57	62	50	47	39	51	45	58
109	46	50	53	65	58	58	60	80	73	67	61	66	68	70	49
125	44	58	40	47	65	49	55	63	67	68	72	63	69	70	48
127	56	46	57	53	41	62	42	51	50	45	44	50	45	40	58
128	36	64	42	65	63	62	53	63	47	77	64	61	69	74	46
129	46	53	72	40	46	60	55	80	53	43	43	54	42	36	70
130	63	50	64	44	39	58	40	65	56	42	41	37	49	41	58
131	44	53	46	44	51	47	50	57	47	61	59	61	60	54	69
133	50	53	51	44	60	60	53	63	50	57	60	66	62	57	62
134	40	68	36	51	58	53	88	74	59	77	75	90	49	69	37
135	46	60	57	44	48	53	50	80	59	50	57	54	46	59	43
136	44	53	48	44	53	51	45	57	53	54	49	59	44	49	64
139	46	48	51	44	34	56	42	73	50	49	44	43	51	45	54
141	44	64	49	51	56	60	65	84	59	60	67	68	54	55	51
142	53	50	57	40	39	49	58	53	47	43	49	54	43	38	70
143	40	48	62	44	51	53	63	65	50	52	47	57	48	46	62
145	46	68	51	47	63	55	60	88	53	61	67	61	65	56	56
148	56	46	75	42	53	64	50	69	62	45	43	54	39	35	67
150	50	50	62	40	41	55	47	53	56	42	48	63	37	40	59
152	50	48	68	58	41	78	50	78	67	45	48	75	38	38	59
153	50	46	66	42	39	56	68	39	56	41	47	59	39	38	67
154	50	48	59	47	60	56	40	74	59	49	41	45	50	42	54

(Continued on the next page.)

MMPI DATA

Control Group: Post-test

Subject	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si	A	Es
155	56	55	49	47	44	45	42	73	41	45	49	66	56	46	64
156	36	70	46	49	51	55	55	73	56	63	65	59	65	66	53
158	36	66	46	72	84	69	78	73	67	91	79	63	62	79	35
162	53	48	70	44	48	60	53	51	70	45	43	50	41	36	61
164	46	50	59	47	53	45	55	69	56	50	51	66	43	44	58
166	60	48	62	44	48	58	45	55	44	43	47	43	44	38	58
167	46	48	62	40	34	60	50	51	50	41	43	57	38	40	56
168	53	46	64	40	44	58	42	61	50	41	41	43	39	38	61
169	53	48	64	42	39	56	42	57	53	45	41	52	56	40	61
170	53	48	68	40	41	53	30	53	47	39	44	41	43	37	72

Scale	Sum of scores	Mean	Scale	Sum of scores	Mean
L	1694	48.400	Pa	1933	55.228
F	1857	53.057	Pt	1843	52.657
K	1983	56.657	Sc	1839	52.542
Hs	1648	47.085	Ma	2009	57.400
D	1721	49.171	Si	1764	50.400
Hy	1963	56.085	A	1707	48.771
Pd	1833	52.371	Es	2008	57.371
Mf	2283	65.228			

APPENDIX IV

MMPI DATA

Experimental Group: Pre-test

Subject	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si	A	Es
84	36	60	55	58	65	64	42	90	50	67	67	63	54	55	49
85	36	50	48	72	60	65	58	55	53	73	63	50	58	67	48
86	50	68	46	58	89	65	58	84	70	75	82	45	76	62	40
87	44	48	44	42	51	47	55	59	56	61	48	57	64	62	58
88	50	58	61	49	51	58	55	51	50	49	52	57	41	49	59
89	46	44	59	47	39	53	35	63	56	49	44	45	56	40	59
90	44	58	59	47	60	71	68	74	59	64	61	68	47	49	69
91	36	58	59	49	53	64	55	57	59	67	65	70	52	52	64
92	44	48	46	58	68	56	55	49	56	73	63	61	73	69	49
93	44	55	55	56	56	58	65	74	65	67	71	68	56	64	41
105	46	55	57	44	53	49	50	57	41	54	55	54	64	50	56
106	50	53	55	47	41	55	58	71	47	48	47	54	49	41	58
108	44	46	66	42	44	60	47	47	53	43	45	45	37	40	58
111	40	60	36	51	75	53	63	63	56	78	74	68	60	75	46
112	36	55	35	62	58	51	70	73	59	78	84	61	68	77	38
115	46	58	61	53	56	60	50	59	53	57	53	52	67	49	56
116	40	53	57	44	46	53	60	73	56	48	44	66	36	42	61
117	53	62	49	56	84	58	60	51	47	68	72	66	85	65	51
118	40	46	59	44	39	64	47	67	50	50	52	66	42	45	67
120	40	50	44	49	60	51	73	53	67	68	67	57	61	62	61
121	53	53	62	47	48	58	58	63	56	54	48	61	47	45	66
122	36	55	48	49	70	53	60	76	50	74	71	75	70	69	41
123	50	50	64	40	56	62	60	65	59	45	45	52	52	44	64
125	44	58	40	47	65	49	55	63	67	68	72	63	69	70	48
127	56	46	57	53	41	62	42	51	50	45	44	50	45	40	58

(Continued on the next page.)

MMPI DATA

Experimental Group: Pre-test

Subject	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si	A	Es
128	36	64	42	65	63	62	53	63	47	77	64	61	69	74	46
129	46	53	72	40	46	60	55	80	53	43	43	54	42	36	70
130	63	50	64	44	39	58	40	65	56	42	41	37	49	41	58
131	44	53	46	44	51	47	50	57	47	61	59	61	60	54	69
133	50	53	51	44	60	60	53	63	50	57	60	66	62	57	62
134	40	68	36	51	58	53	88	74	59	77	75	90	49	69	37
135	46	60	57	44	48	53	50	80	59	50	57	54	46	59	43
138	36	55	44	60	68	58	73	67	53	74	78	50	73	74	38
140	40	60	44	44	41	47	53	74	56	60	64	75	50	55	51
141	44	64	49	51	56	60	65	84	59	60	67	68	54	55	51

Scale	Sum of scores	Mean	Scale	Sum of scores	Mean
L	1549	44.257	Pa	1924	54.971
F	1927	55.057	Pt	2124	60.685
K	1827	52.200	Sc	2097	59.914
Hs	1751	50.028	Ma	2090	59.714
D	1958	55.942	Si	1983	56.657
Hy	1997	57.057	A	1957	55.914
Pd	1979	56.542	Es	1890	54.000
Mf	2295	65.571			

MMPI DATA

Experimental Group: Post-test

Subject	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si	A	Es
84	36	60	55	53	56	58	53	80	53	57	61	61	54	54	51
85	53	55	57	44	36	53	53	57	50	53	53	61	45	41	66
86	56	53	59	47	58	60	50	78	62	48	49	48	55	50	53
87	44	48	36	42	51	0	40	59	50	61	45	52	66	65	59
88	46	60	57	69	63	65	65	63	53	67	60	59	45	61	54
89	53	46	57	40	36	49	35	59	44	43	40	54	54	37	64
90	66	53	62	47	41	69	53	71	65	52	51	59	37	37	61
91	46	55	57	49	58	64	65	63	53	63	59	68	52	59	62
92	50	48	64	40	36	55	53	51	53	49	49	61	46	42	62
93	53	48	59	44	48	49	53	65	47	50	49	68	43	46	59
105	46	55	57	44	53	49	50	57	41	54	55	54	64	55	56
106	46	48	53	42	39	58	58	71	56	45	47	59	47	41	58
108	60	46	74	40	44	62	60	49	56	38	40	61	37	37	62
111	40	53	36	49	56	44	55	73	53	74	64	75	55	67	54
112	40	60	46	53	65	53	78	84	70	78	82	63	58	74	41
115	53	46	57	53	53	58	47	71	53	50	47	52	54	46	64
116	44	53	55	44	44	55	58	73	50	41	43	63	38	41	62
117	50	53	49	51	65	51	53	47	44	53	49	59	64	47	62
118	50	48	59	44	39	65	47	74	56	48	51	57	42	47	66
120	40	46	55	42	65	47	63	59	59	59	55	59	56	46	66
121	50	48	64	49	46	65	58	67	56	49	48	68	45	44	64
122	40	48	66	42	34	55	55	71	56	45	45	68	39	40	66
123	50	55	66	44	48	64	63	69	56	41	45	57	45	36	74
125	46	44	49	49	51	56	45	63	62	61	60	72	54	60	59
127	50	48	68	47	46	65	63	67	59	42	47	61	42	41	64

(Continued on the next page.)

MMPI DATA

Experimental Group: Post-test

Subject	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si	A	Es
128	40	62	48	58	63	62	47	69	53	67	61	48	69	64	43
129	40	48	72	40	48	64	55	82	56	41	41	50	40	38	70
130	63	48	68	42	46	60	60	69	56	42	43	52	46	37	56
131	46	50	46	42	60	40	58	63	41	66	59	50	70	61	51
133	56	53	68	62	65	71	70	73	62	57	59	61	55	52	54
134	44	58	55	56	60	67	73	69	56	54	53	61	46	56	51
135	40	64	62	53	65	64	53	98	65	56	59	59	51	57	53
138	40	53	44	49	44	44	42	73	44	59	64	59	56	60	45
140	44	55	40	49	41	49	55	73	59	68	68	77	53	64	49
141	40	55	49	56	56	60	70	82	53	56	71	75	46	46	54

Scale	Sum of scores	Mean	Scale	Sum of scores	Mean
L	1661	47.457	Pa	1902	54.342
F	1823	52.085	Pt	1887	53.914
K	1969	56.257	Sc	1872	53.485
Hs	1675	47.857	Ma	2111	60.314
D	1779	50.828	Si	1769	50.542
Hy	1950	57.353	A	1744	49.828
Pd	1956	55.885	Es	2035	58.142
Mf	2392	68.342			

APPENDIX V

TAT DATA

MOTIVATION INDEX

Control Group			Experimental Group		
Subject	Pre	Post	Subject	Pre	Post
99	96	131	84	58	104
100	85	77	85	58	131
101	77	92	86	81	108
102	119	135	87	162	146
103	96	104	88	65	138
109	123	100	89	88	135
110	88	123	90	138	173
119	23	31	91	118	135
125	58	42	92	42	73
127	100	154	93	62	46
128	62	115	95	69	142
129	65	50	96	69	69
130	73	108	97	27	115
131	19	27	98	46	123
133	38	19	105	92	123
134	96	50	106	138	135
135	58	115	108	154	154
138	42	38	111	135	131
139	81	62	112	42	127
141	73	115	115	112	162
143	112	81	116	38	142
145	58	100	117	65	85
148	77	77	118	81	104
150	131	73	120	92	146
152	100	123	121	85	181

(Continued on the next page.)

TAT DATA

MOTIVATION INDEX

Control Group

Subject	Pre	Post
153	112	96
154	112	127
155	38	54
156	58	42
158	96	65
162	62	96
164	77	92
166	38	46
167	104	100
168	81	31

Experimental Group

Subject	Pre	Post
122	77	158
125	42	146
127	154	135
128	115	146
129	50	69
130	108	135
131	27	62
133	19	50
134	50	162
135	115	142

Control Group

	Sum of scores	Mean
Pre-test	2728	77.942
Post-test	2787	79.628

Experimental Group

	Sum of scores	Mean
Pre-test	2874	82.114
Post-test	4333	123.800

APPROVAL SHEET

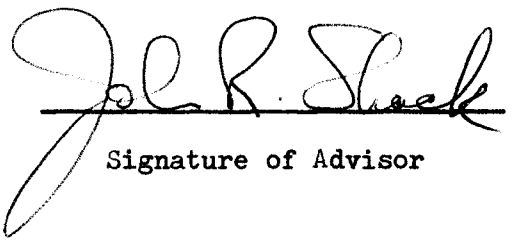
The thesis submitted by Bede Smith has been read and approved by members of the Department of Psychology.

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

12-7-71

Date



Signature of Advisor